The PHOTOFACT® Servicer

SET 570 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★MARCH 1962

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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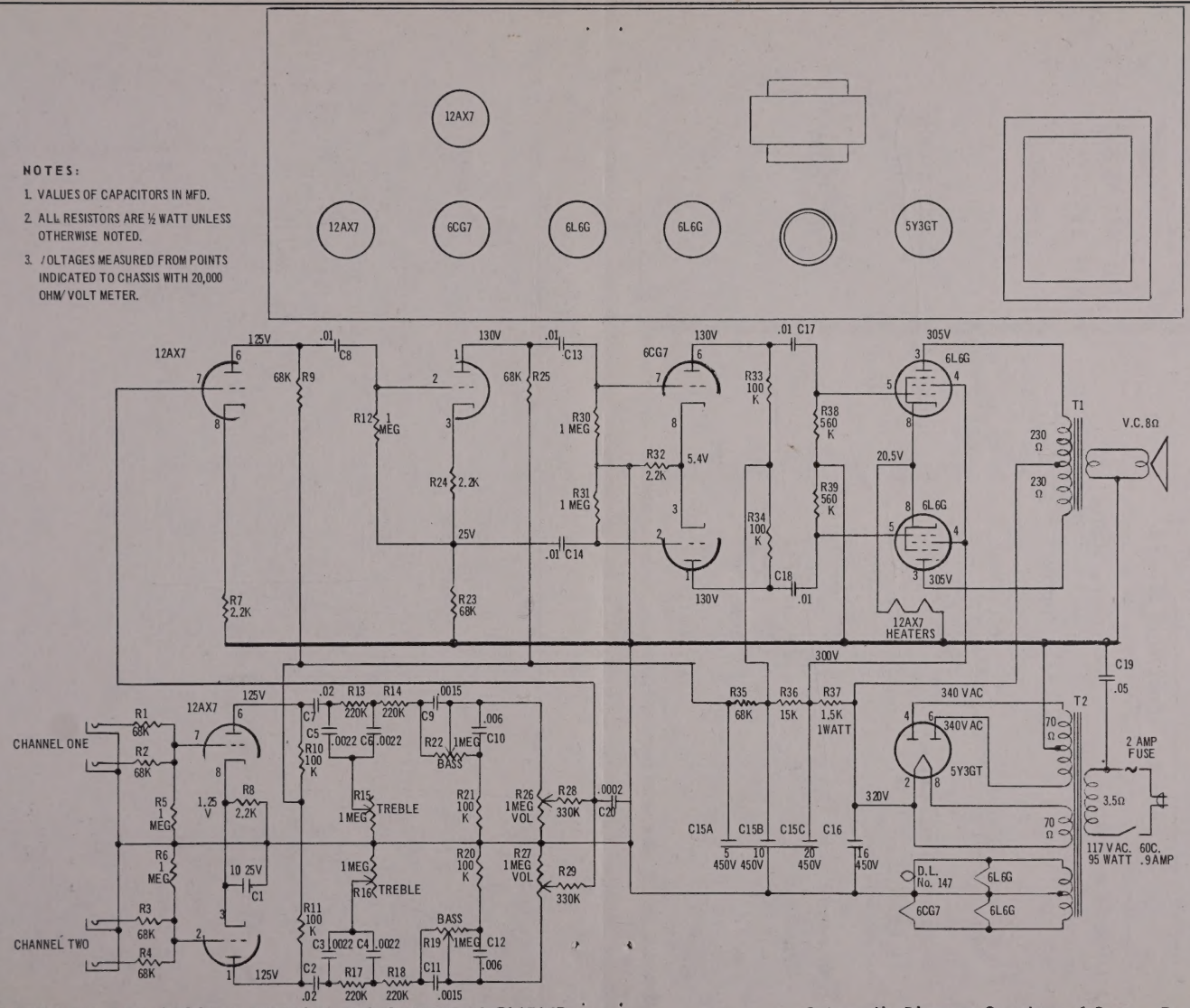
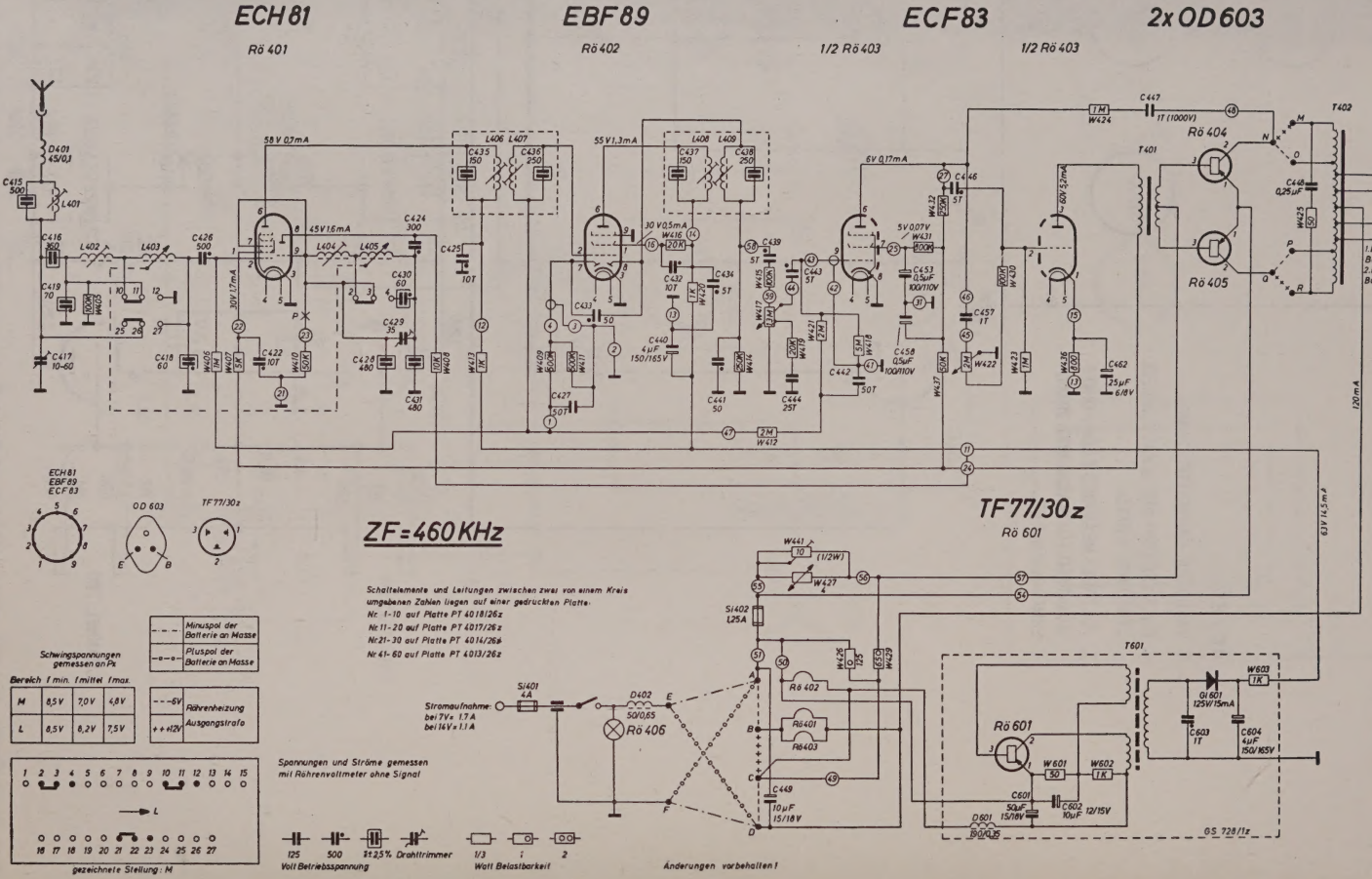
Silvertone Model 1473 (CH. 185.10310)



SILVERTONE MODEL 1473 (CH. 185.10310) MUSICAL INSTRUMENT AMPLIFIER

Schematic Diagram Courtesy of Sears, Roebuck & Company



BLAUPUNKT MODEL BREMEN

Schematic Diagram Courtesy of Blaupunkt: Importer Robert Bosch Corporation

PHOTOFACT® Folder

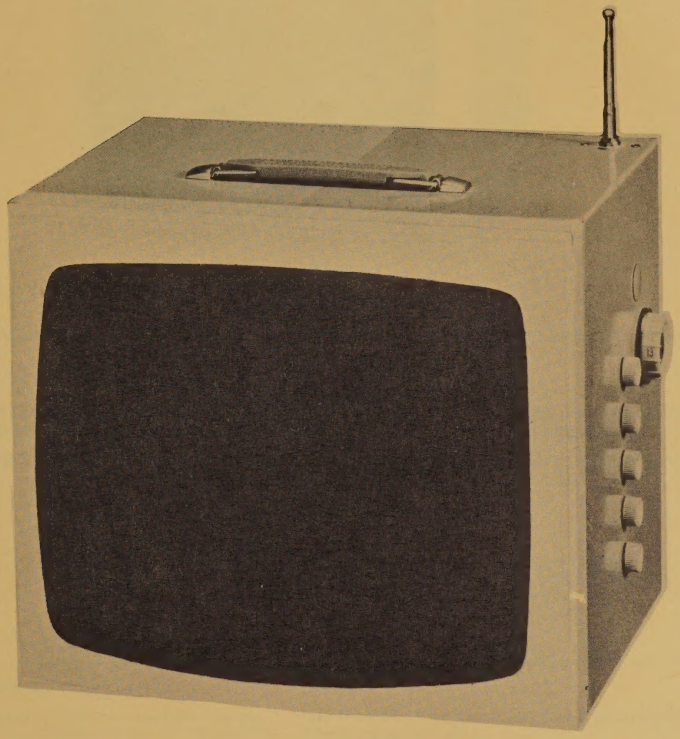
TRUETONE MODELS
2DC3232A, 2DC3233A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

TRUETONE MODELS
2DC3232A, 2DC3233A



MODEL 2DC3232A

TRUETONE MODELS
2DC3232A, 2DC3233A

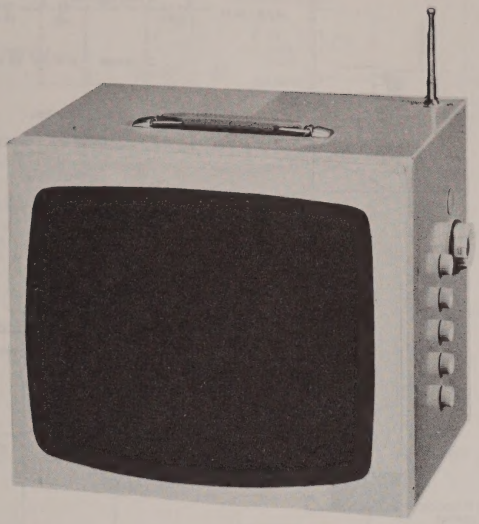
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PHOTOFACT® Folder

TRUETONE MODELS 2DC3232A, 2DC3233A

TRUETONE MODELS 2DC3232A, 2DC3233A



MODEL 2DC3232A

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	Truetone, Models 2DC3232A, 2DC3233A
SUPPLIER	Western Auto Supply Co., 2107 Grande Avenue, Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	VHF - Fourteen, UHF - Fifteen
POWER SUPPLY	110 - 120 Volts AC, 60 Cycle RATING 115 Watts, 1.15 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

It is necessary to remove chassis and picture tube for access to safety glass. See "Disassembly Instructions" page 16.

FUSE DEVICE

A 4.7Ω fusible resistor is used for low voltage power supply protection. (See R58 in Photo "Chassis - Rear View").

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency Slug (B1).

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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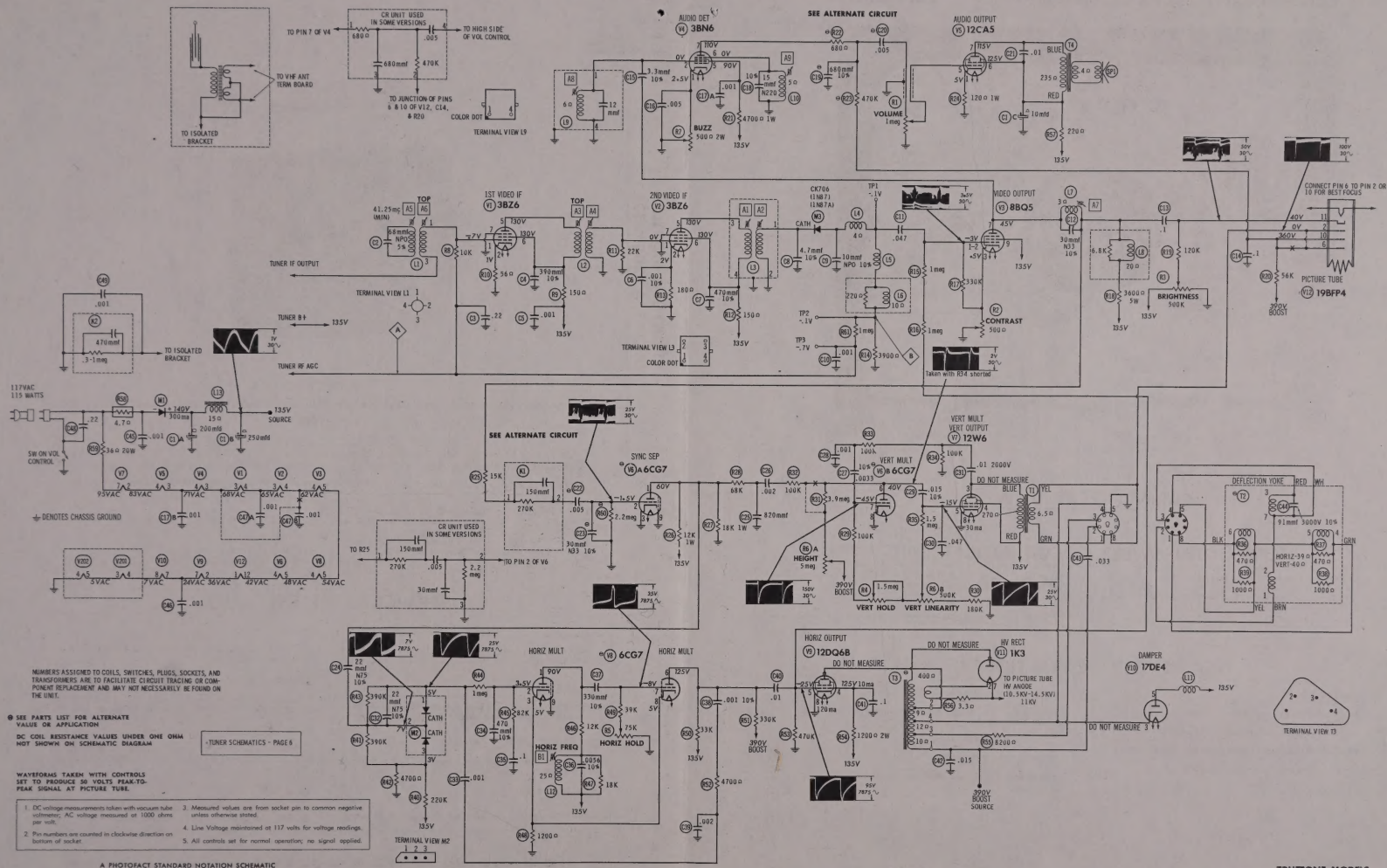
LA179R

SET 570 FOLDER 1


TO ISOLATED BRACKET
TO VHF ANT TERM BOARD
TO PIN 7 OF V4
CR UNIT USED IN SOME VERSIONS
TO HIGH SIDE OF VOL CONTROL
TO JUNCTION OF PINS 6 & 10 OF V12, C14, & R20
COLOR DOT
TERMINAL VIEW L9
AUDIO DET V4 3BN6
SEE ALTERNATE CIRCUIT
AUDIO OUTPUT V5 12CA5
VOLUME 1meg
BUZZ 500Ω 2W
1ST VIDEO IF V1 3BZ6
2ND VIDEO IF V2 3BZ6
CK706 (1N87) (1N87A)
VIDEO OUTPUT V3 8BQ5
CONTRAST 500Ω
BRIGHTNESS 500K
PICTURE TUBE V12 19BFP4
CONNECT PIN 6 TO PIN 2 OR 10 FOR BEST FOCUS
TUNER IF OUTPUT
TERMINAL VIEW L1
TERMINAL VIEW L3
TUNER B+
TUNER RF AGC
TO ISOLATED BRACKET
117VAC 115 WATTS
SW ON VOL CONTROL
135V SOURCE
DENOTES CHASSIS GROUND
SEE ALTERNATE CIRCUIT
SYNC SEP V8A 6CG7
VERT MULT V8B 6CG7
VERT MULT VERT OUTPUT V7 12W6
HEIGHT 5meg
VERT HOLD
VERT LINEARITY 180K
DEFLECTION YOKE
HORIZ-30Ω VERT-40Ω
CR UNIT USED IN SOME VERSIONS
TO R25
TO PIN 2 OF V6
HORIZ MULT V9 6CG7
HORIZ FREQ
HORIZ HOLD 75K
HORIZ OUTPUT V6 12DQ6B
DO NOT MEASURE
HV RECT V11 1K3
TO PICTURE TUBE HV ANODE (10.5KV-14.5KV) 11KV
DAMPER V10 17DE4
TERMINAL VIEW T3
TERMINAL VIEW M2
390V BOOST
390V BOOST SOURCE
Taken with R34 shorted
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
TUNER SCHEMATICS - PAGE 6
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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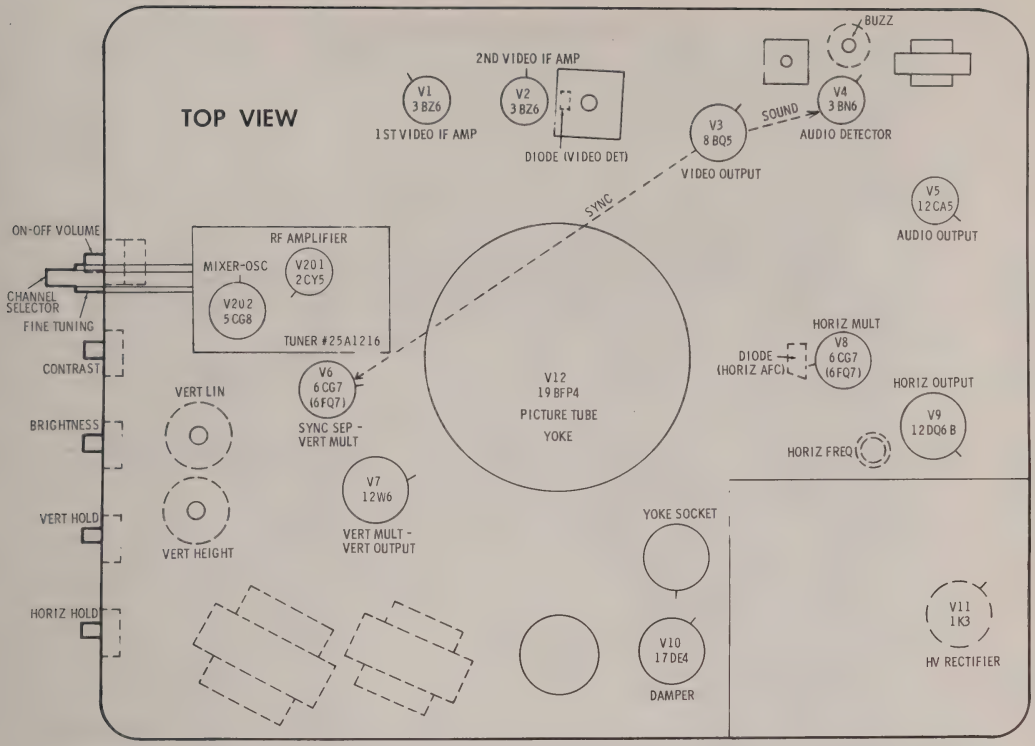
TRUETONE MODELS
2DC3232A, 2DC3233A

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

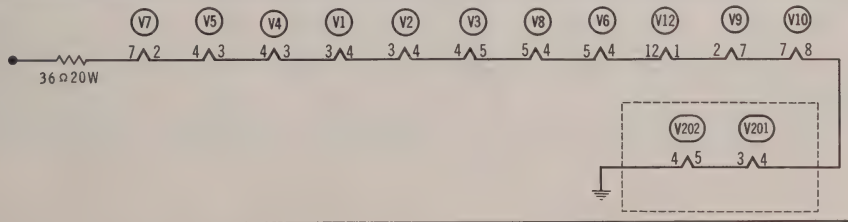
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rectifier M1

SWEEP FAILURE
No raster, has sound V8, V9, V10, V11, V12
No vertical deflection V6, V7
Poor vert. linearity or foldover V6, V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture V8, V9, V10, M1
Vert. off freq. V6, V7
Horiz. off freq. Diode (Horiz. AFC), V8

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V12
Has pic, no sound V4, V5

SYNC FAILURE
No vert. sync V6
No horiz. sync V6
No vert. or horiz. sync V6

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



TV ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 7 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .01mfd to pin 1 (grid) of 2nd Video IF. Low side to chassis. Adjust output for 4VP-P on scope.	44.0MC (10MC Swp.)	42.4MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 47K to point (B). Low side to chassis. (Across Video Det. Load)	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A1 controls marker position and A2 controls gain and symmetry.
2.	High side thru .01mfd to pin 1 (grid) of 1st Video IF. Low side to chassis. Adjust for 4VP-P on scope.	"	42.4MC 43.5MC 44.5MC 45.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. A3 controls marker position and A4 controls gain and symmetry.
3.	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC 42.4MC 43.5MC 44.5MC 45.75MC	"	"	A5, A6, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A5 to place 41.25MC marker in trap notch.

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of Video Output. Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	AC probe to pin 11 (cathode) of picture tube. Common to chassis. Use 0-10V AC scale.	A7	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength at the antenna terminals until a hiss is heard in the sound similar to super-regeneration.
Adjust A8, A9 and the Buzz control for maximum undistorted sound with MINIMUM buzz.
If the hiss disappears during adjusting, further reduce the signal strength.

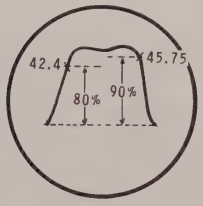


FIG. 1

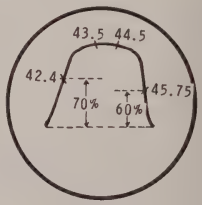


FIG. 2

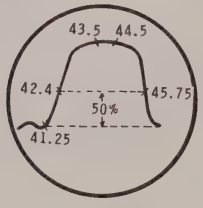
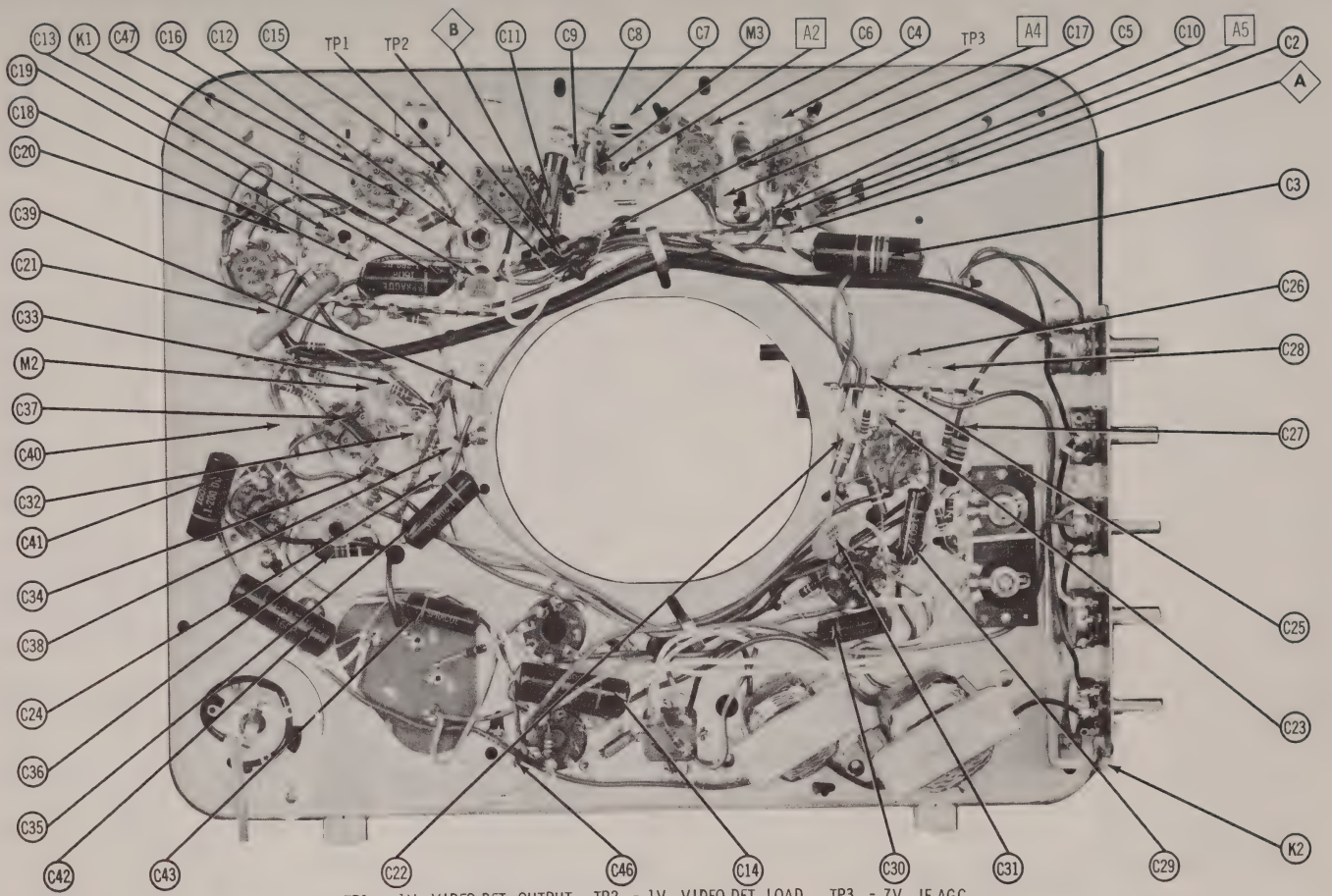
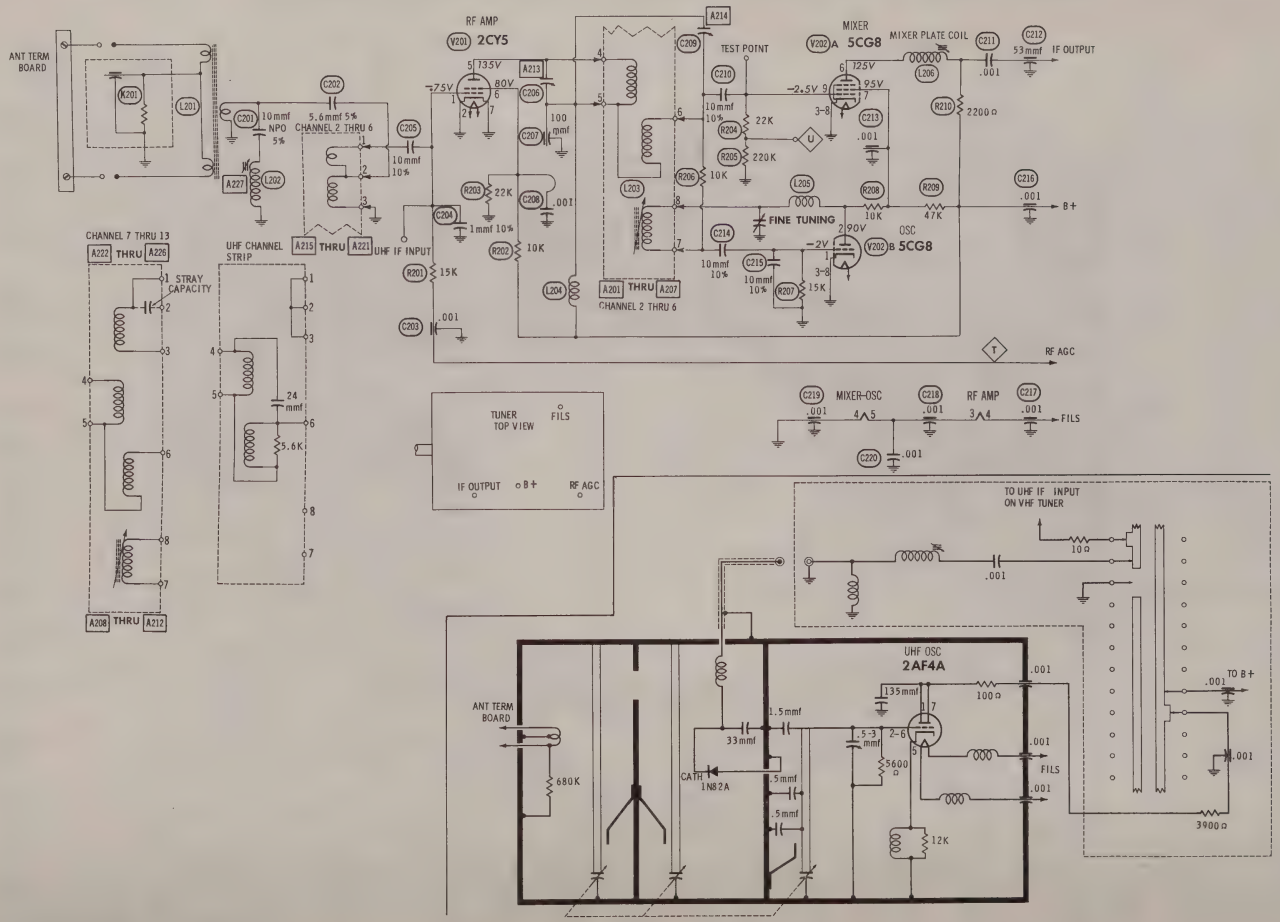


FIG. 3



TP1 -.1V VIDEO DET. OUTPUT TP2 -.1V VIDEO DET. LOAD TP3 -.7V IF AGC

CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER 25A1216, UHF TUNER 251221-2, UHF ADAPTER SWITCH ASS'Y 2A523

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A213, A214 ..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
		207MC	205.25MC 209.75MC	12		A202	
		201MC	199.25MC 203.75MC	11		A203	
		195MC	193.25MC 197.75MC	10		A204	
		189MC	187.25MC 191.75MC	9		A205	
		183MC	181.25MC 185.75MC	8		A206	
		177MC	175.25MC 179.75MC	7		A207	
		85MC	83.25MC 87.75MC	6		A208	
		79MC	77.25MC 81.75MC	5		A209	
		69MC	67.25MC 71.75MC	4		A210	
		63MC	61.25MC 65.75MC	3		A211	
		57MC	55.25MC 59.75MC	2		A212	

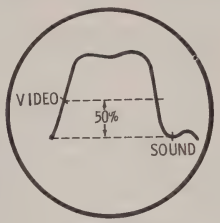


FIG. 201

RF AND MIXER ALIGNMENT

Connect the negative lead of a variable bias supply to point (T). Positive to chassis. Set bias for 2.5 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (D). Common to chassis.	A213, A214,	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202.
3.	"	213MC	211.25MC 215.75MC	13	"	A215	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
		207MC	205.25MC 209.75MC	12		A216	
		201MC	199.25MC 203.75MC	11		A217	
		195MC	193.25MC 197.75MC	10		A218	
		189MC	187.25MC 191.75MC	9		A219	
		183MC	181.25MC 185.75MC	8		A220	
		177MC	175.25MC 179.75MC	7		A221	
		85MC	83.25MC 87.75MC	6		A222	
		79MC	77.25MC 81.75MC	5		A223	
		69MC	67.25MC 71.75MC	4		A224	
		63MC	61.25MC 65.75MC	3		A225	
		57MC	55.25MC 59.75MC	2		A226	

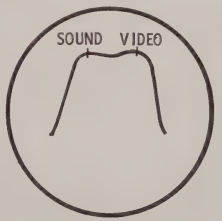


FIG. 202

IF TRAP ADJUSTMENT

Adjust A227 for MINIMUM RF interference.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	1st Video IF Amp.	3BZ6
V2	2nd Video IF Amp.	3BZ6
V3	Video Output	5BQ6
V4	Audio Detector	3BN6
V5	Audio Output	12AL5
V6	Sync Sep. - Vert. Mult.	6CG7 (6FQ7) *
V7	Vert. Multi. - Vert. Output	12W6
V8	Horiz. Multi.	6CG7 (6FQ7) *
V9	Horiz. Output	12DQ6B
V10	Damper	17DE4
V11	HV Rectifier	1X2

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
VL2	19BFP4		19BFP4 ①			① Aluminized

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▪300	300	45X445	AFHS3-13-90	XB0253	XC3-20	FP318.8	TMD-3260	TVL8-3490*
B	▪250	200			BR1045			TD-10-250	
C	▲10	200							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	68	NPO	5%			DTZ-68	C10G68C		CNO-468	10TCC-C68
C3	.22	200V			P288N-22		CUB2P23	2DP-4-224	GEM-3022	2TM-P22
C4	390		10%		DD-390	DD-391	L10T39	CCD-392	GP339	10TS-T39
C5	.001				BPD-001	DD-102	BYA10X	CCD-102	B-210	5HK-D10
C6	.001		10%		DI-1000	DD-102	PM5DX	CCD-102	GP210	10TS-D10
C7	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C8	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10Y47C	CCTO-4R7	CNO-547	10TCC-Y47
C9	10	NPO	10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C10	.001				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C11	.047	200V			P288N-047	DD-503	CUB2P47	4DP-3-473	GEM-4147	2TM-P47
C12	30	N33	10%	947X5069				*		
C13	.1	200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C14	.1	600V			P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C15	3.3		10%		NPO-SI 3.3	TCZ-3R3	C10Y33C	CCTO-3R3	CNO-533	10TCC-Y33
C16	.005				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17A	.001				BPD-2X001	DD3-102	BYH10DI	CCD-102	B2X210	5HK-2D10
B	.001							CCD-102		
C18	15	N220	10%					*		
C19	680		10%	Note 1	DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C20	.005			Note 1	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C21	.01				BPD-01	DD-103	BYA10B1	CCD-103	B-110	5HK-S10
C22	.005			Note 2	BPD-005	DD-502	BYA10S1	CCD-503	B-250	5HK-D50
C23	30	N33	10%	Note 2				*		
C24	22	N75	10%					*		
C25	820				DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C26	.002				BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C27	.0033	400V	10%		V84C4D33-10%		E84E3331	6DP-1-332	GEM-16333	6TM-D33
C28	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C29	.015	600V	10%		V84C6S15-10%		E68E153	6DP-2-153		6TM-S15
C30	.047	200V			P288N-047	DD-503	CUB2P47	4DP-3-473	GEM-4147	2TM-P47
C31	.01	2000V						*	2HV-210	30GA-S10
C32	33	N75	10%					*		
C33	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C34	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C35	.1	200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C36	.0056	400V	10%				E84E562	6DP-1-562		6PS-D56
C37	330		10%		1469-00033		5R5T33	CM-19B-331K	MCB241	MS-330
C38	.001		10%		DI-1000	DD-102	5R5JX	CCD-102	GP210	10TS-D10
C39	.002				BPD-002	DD-202	BYA10D2	CCD-203	B-220	5HK-D20
C40	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C41	.1	200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C42	.015	600V			P688N-015	DD-153	CUB6S15	6DP-2-153		6TM-S15
C43	.033	400V			P488N-033	DD-303	CUB4S33	4DP-2-333	GEM-4133	5TM-S33
C44	68	3000V	10%						3DY-310	30TY-T15
C45	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C46	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C47A	.001				BPD-2X001	DD3-102	BYH10DI	CCD-102	B2X210	5HK-2D10
B	.001							CCD-102		
C48	.22	400V			P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C49	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
# Truetone Part Number
Note 1. Some versions use component combination unit (Pt. #76X37) for C19, C20, R22, R23.
Note 2. Some versions use component combination unit (Pt. #76X44) for C22, C23, R60, & K1.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	36X433	B-59	A47-1meg-S	Q11-137	U54	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWX-12	UR-26	TS-1	Power Off-On
R2	500Ω	½	40X505	B-415		Q17-105	U52R	Contrast
R3A	500K	½	40X506	B-59	A47-500K-S	Q11-133	U50	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

CONTROLS (cont)

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R4A	1.5meg	½	40X507	B-742	A47-1.5meg-S	Q11-138	U155	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	75K	½	40X511	B-58	A47-75K-S	Q11-135	TA18L	Horiz. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	5meg	½	40X508	TT-87	B47-5meg-S	HLC-5	PTA56L	Height
B	500K	½		TT-59	B47-500K-S	Q11-133	PTA55L	Vert. Linearity
C	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7	500Ω	2(WW)	40X472			110-500	PFL-500	Buzz

RESISTORS

All wattages 1/2 watt, or less, unless otherwise noted.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R8	10K			
R9	15Ω			
R10	56Ω			
R11	22K			
R12	15Ω			
R13	180Ω			
R14	3900Ω			
R15	1meg			
R16	1meg			
R17	330K			
R18	3600Ω 5W	PW5-3600	5W-SQ-3600	
R19	120K			
R20	56K			
R21	4700Ω 1W			
R22	820Ω			Note 1
R23	470K			Note 1
R24	120Ω 1W			
R25	15K			
R26	12K 1W			
R27	18K 1W			
R28	82K			
R29	100K			
R30	180K			
R31	3.9meg			
R32	100K			
R33	100K			
R34	100K			
R35	1.5meg			
R36	470Ω			
R37	470Ω			
R38	1000Ω			
R39	470Ω			
R40	220K			
R41	390K			
R42	4700Ω			
R43	390K			
R44	1meg			
R45	82K			
R46	12K			
R47	18K			
R48	1200Ω			
R49	39K			
R50	33K			
R51	330K			
R52	4700Ω			
R53	470K			
R54	1200Ω 2W			
R55	8200Ω			
R56	3.3Ω			
R57	220Ω			
R58	4.7Ω †	FR 5.0	F 4.7	#43X431
R59	36Ω 20W			#43X402
R60	2.2meg			Note 2
R61	1meg			

Note 1. Some versions use component combination unit (Pt. #76X37) for R22, R23, C19, C20.
Note 2. Some versions use component combination unit (Pt. #76X44) for R60, C22, C23, & K1.
† Fusible Type
# Truetone Part Number

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA
K1	Sync Sep. Grid	150mmf, 270K	Note 1	Centralab PC-60 Aerovox PA-43I
K2	Control Isolation	470mmf, .3-1meg	76X18	Centralab RC-47I Sprague ACI-1

Note 1. Some versions use component combination unit (Pt. #76X44) for K1, R60, C22, C23.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workmen TV PART No.	NOTES
L1A	1st Video IF	9A2436	TV-156	6221	RTC-8552	TC250	①Wound on 220Ω Resistor.
B	41.25MC Trap						
L2	2nd Video IF	9A2390				TC223	②Wound on 6800Ω Resistor.
L3	3rd Video IF	9A2486					
L4	RF Choke (18uh)	9A2432				T989	
L5	Peaking (290uh)	38A22	TV-185	6155	RTC-8587	T318	* Parallel with 220Ω Resistor.
L6	Peaking (110uh)	38A19 ①	TV-194 *	6153 *	RTC-8574 *	T305 *	
L7	4.5MC Trap	9A2366	TV-151	1469	RTC-8602	T249	
L8	Peaking (350uh)	38A28 ②	TV-190 ▲	6132 ▲	RTC-8577 ▲	T319 ▲	▲ Parallel with 6800Ω Resistor.
L9	Sound IF	9A2434	TV-155	1470-A	RTC-8604	T247	
L10	Quadrature	9A2367	TV-121	1480	RTC-8605	T251	
L11	RF Choke (1.5uh)	9A2380	BC-562	4604	RTC-8516	T856	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L12	Horiz. Stabilizer	9A2487	MWC-12	6315	WC-18		WLC-3	T110	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT (1000 ~/s)	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L13	.300A	15Ω	.5 Hy.	52X103-3		C-2343		C-34X	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	51X193-3	A-2815 ①	VO-109 ①	26875 ①	A-117X	
T2	Yoke (Horiz. 25MH)	9A-2468-2B	MDF-126	DY-51A ②	Y-48 ③	Y-48-2 ④	
	(90°) (Vert. 32MH)	9A-2468-2					
	Alt. Yoke	30X611					
	Yoke Clamp						
	Rear Cover and Centering Device						
T3	Horiz. Output	53X398A	HVO-134 *	HO-297 *	FLY-146 *	D-124 *	* Connect same as original.
	Horiz. Multi. Output	53X398					

① Use 8 to 1 Turns Ratio.
② Remove Jumper from across Yoke Plug Pin #7 & #8 and from across Yoke Terminals #1 & #4. Connect same as original.
③ Remove Jumper from across Yoke Terminals #3 & #6 and from across Yoke Plug Pins #7 & #8.
Connect Yoke Terminal #1 to Plug Pin #4; Yoke #2 & #7 to Yoke Plug Pin #3; Yoke #3 to Plug Pin #2; Yoke #4 to Plug Pin #5; Yoke #5 & #8 to Plug Pin #6.
④ Remove Jumper from across Yoke Plug Pins #1 & #8. Connect same as original.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	5400Ω	3-4Ω	51X192-3	A-3026	A-3877①	24848	S-6X	①Drill new mounting hole(s).

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	12A560-2	4A06	

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: TRUETONE PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.300A	66X23	1N1763	40H	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: TRUETONE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M2	CK706	66X21 ①	6GC1 ①		①Horizontal AFC, Dual Selenium, Common Cathode Video Detector ②Alternate Video Detector
M3	1N80 ②	66X20		1N87A	
	1N87 ②			1N87	
	1N87A ②			1N87A	

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Tuner	25A1216	VHF Complete, STANDARD COIL REPLACEMENT 6GS-422A
	Tuner	25A1221-2	UHF
	Switch	2A521	UHF Input Assembly
	Antenna (Monopole)	9A2488	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	28A704	With Gasket
Gasket	5X265	Safety Glass
Mask	43X1606-3	
Knob	10A1041-1	UHF Channel Selector (UHF Model)
Knob	10A1042-1	UHF Channel Indicator (UHF Model)
Knob	10A835-3	VHF Channel Selector
Knob	10A837-1	Fine Tuning
Knob	10A1036-2	Volume, Brightness, Contrast, Vertical, Horizontal Hold
Spring	38X536	For Knob (Pt. #10A1036-2)
Cabinet	34X625-2	
Cabinet Back	14X708-1	
Handle	42X582-6	

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 6 Conductor

TRUETONE MODELS 2DC3232A, 2DC3233A

FOLDER 1

VHF TUNER PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	2CY5	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10 NPO 5%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C202	5.6 5%							10TCC-V56
C203	.001		EF-001	MFT-1000		CCF-102	CT280A	
C204	1mmf 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C205	10 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C206								
C207	100		EF-0001	MFT-100				
C208	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C209								
C210	10 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C211	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C212	53							
C213	.001		EF-001	MFT-1000		CCF-102	CT280A	
C214	10 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C215	10 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C216	.001		EF-001	MFT-1000		CCF-102	CT280A	
C217	.001		EF-001	MFT-1000		CCF-102	CT280A	
C218	.001		EF-001	MFT-1000		CCF-102	CT280A	
C219	.001		EF-001	MFT-1000		CCF-102	CT280A	
C220	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	15K				R206	10K			
R202	10K				R207	15K			
R203	22K				R208	10K			
R204	22K				R209	47K			
R205	220K				R210	2200Ω			

COMPONENT COMBINATIONS

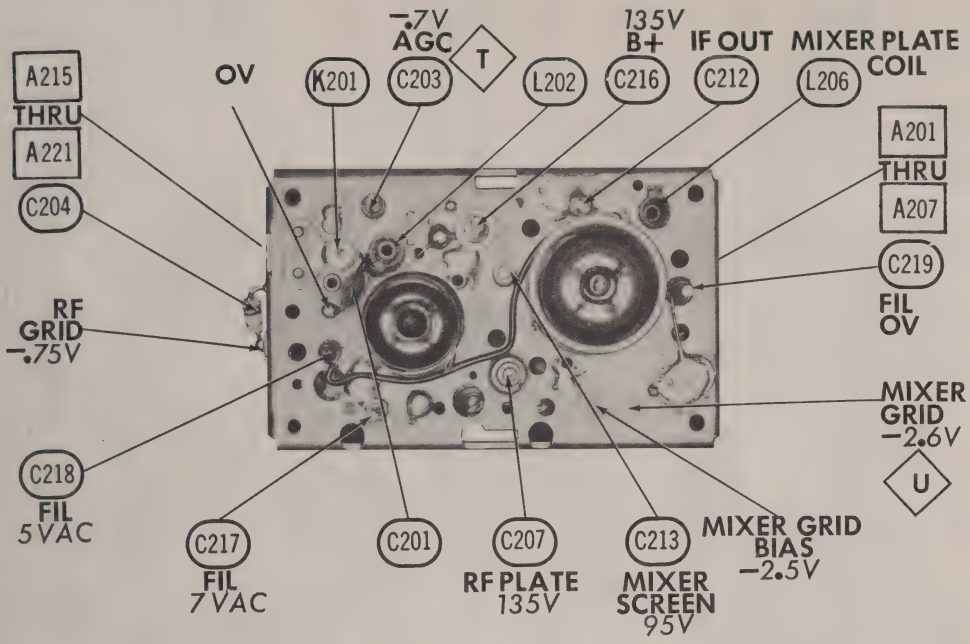
ITEM No.	USE	DESCRIPTION	PART No. *	REPLACEMENT DATA
K201	Antenna Filter		330-1	

* Sarkes Tarzian Part Number

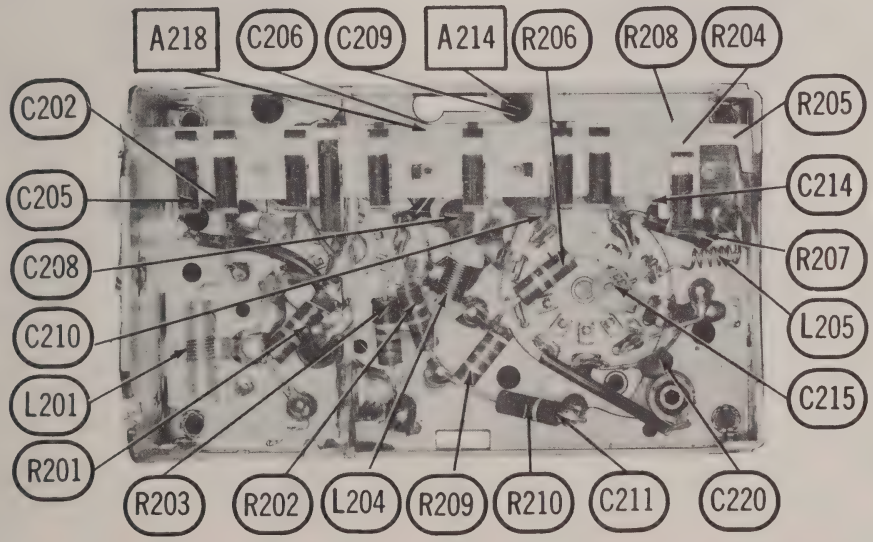
COILS (RF-IF)

ITEM No.	USE	PART No. *	NOTES
L201	Ant. Trans.	3292-501	
L202	IF Trap	2110-26	
L203A	Ant., RF, Osc.	3262-507	Channel 2
B	"	3263-507	Channel 3
C	"	3264-507	Channel 4
D	"	3265-507	Channel 5
E	"	3266-507	Channel 6
F	"	3267-507	Channel 7
G	"	3268-507	Channel 8
L203H	Ant., RF, Osc.	3269-507	Channel 9
J	"	3270-507	Channel 10
K	"	3271-507	Channel 11
L	"	3272-507	Channel 12
M	"	3273-507	Channel 13
N	"	3261-507	UHF
L204	RF Choke	2321-14	
L205	RF Choke	309-5	
L206	Mixer Plate	2110-30	

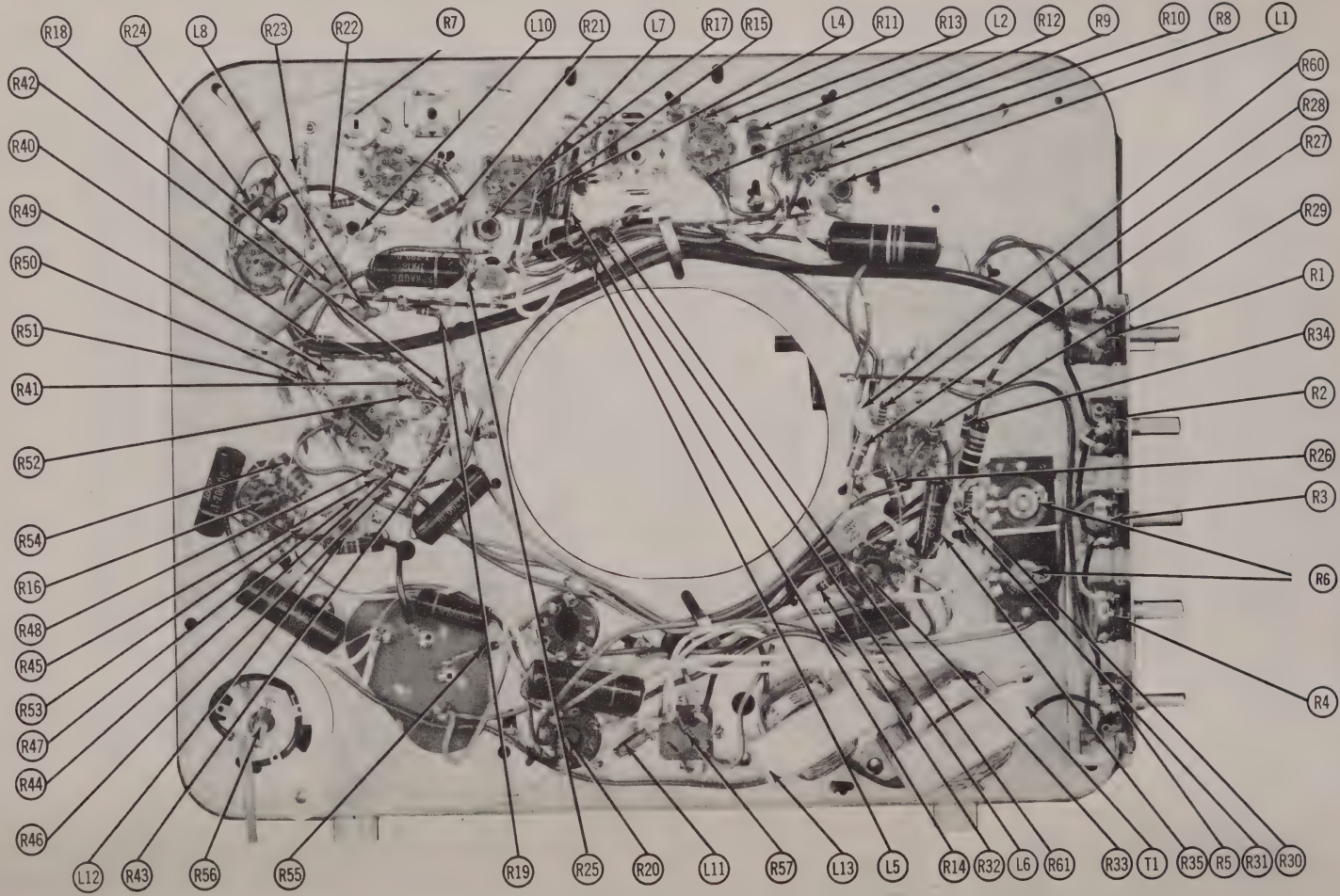
* Sarkes Tarzian Part Numbers



VHF TUNER 25A1216 - TOP VIEW

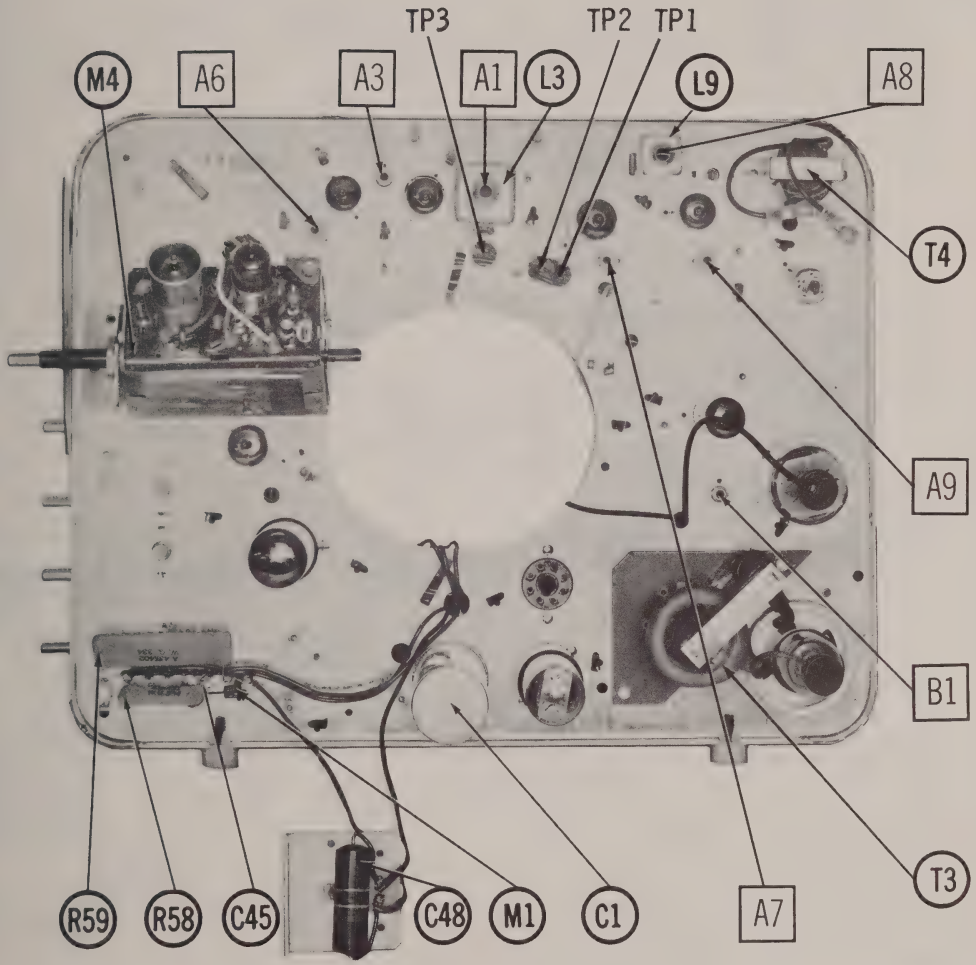


VHF TUNER 25A1216 - BOTTOM VIEW



CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR, TRANSF. IDENT.

TP1	-.1V	VIDEO DET. OUTPUT
TP2	-.1V	VIDEO DET. LOAD
TP3	-.7V	VIDEO IF AGC



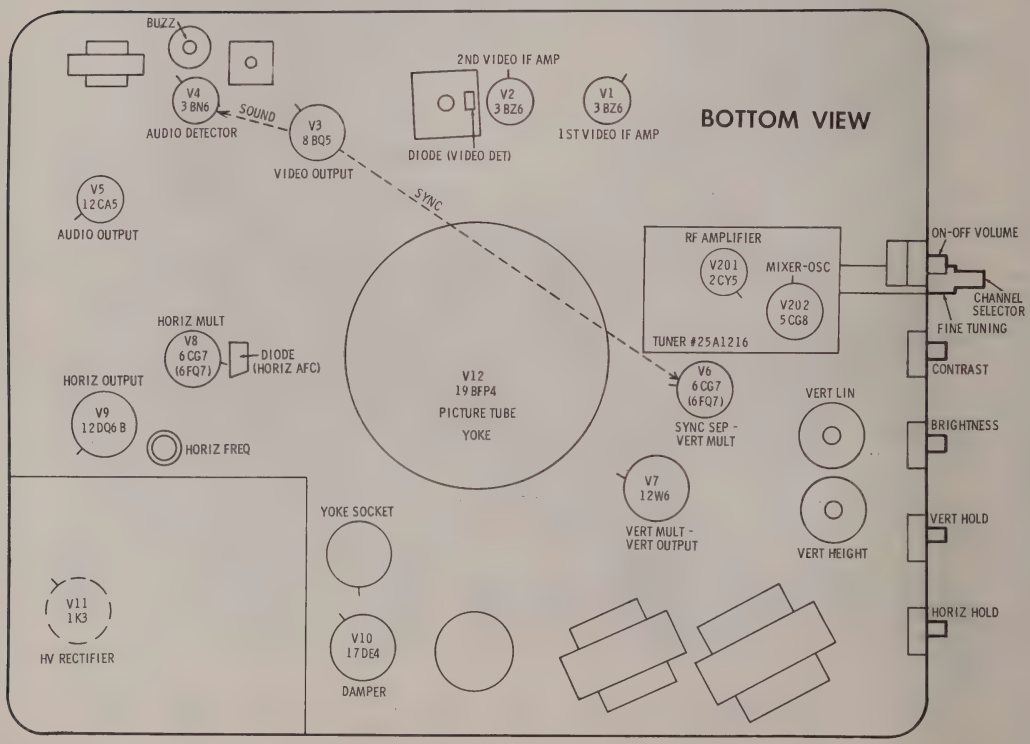
CHASSIS - REAR VIEW

RESISTANCE MEASUREMENTS

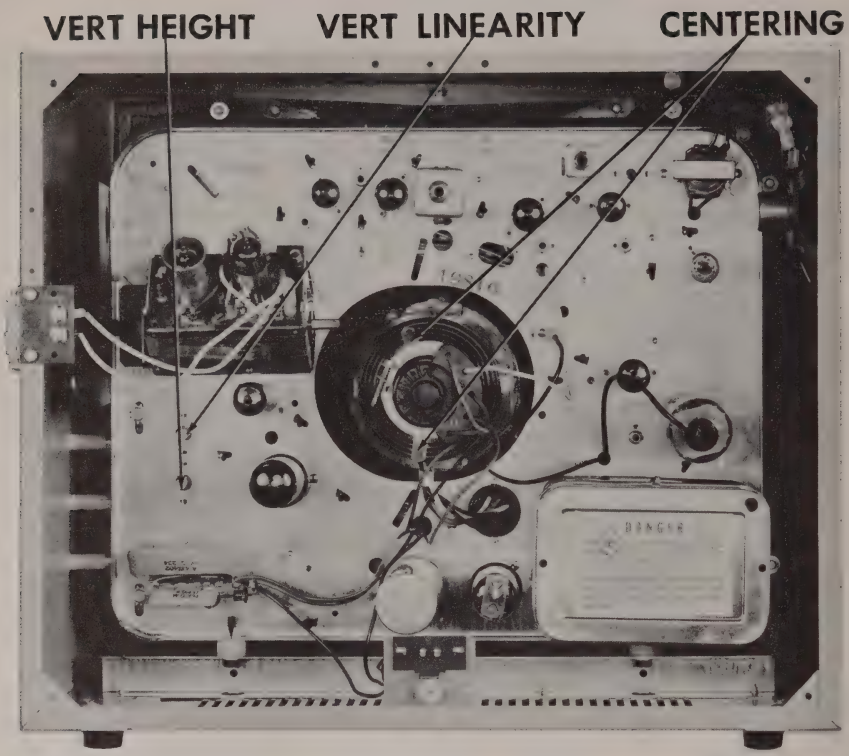
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	1meg	56Ω	51Ω	49Ω	†165Ω	†165Ω	0Ω		
V2	3BZ6	.1Ω	180Ω	49Ω	48Ω	†165Ω	†165Ω	0Ω		
V3	8BQ5	NC	300K	•100Ω	48Ω	42Ω	NC	†3600Ω	NC	†15Ω
V4	3BN6	•250Ω	6Ω	51Ω	54Ω	†4700Ω	5Ω	†530K		
V5	12CA5	120Ω	NC	54Ω	60Ω	•100K	†235Ω	†470Ω		
V6	6CG7	†10K	2.2meg	0Ω	34Ω	38Ω	†•7meg	•1.2meg	0Ω	0Ω
V7	12W6	TP	60Ω	†285Ω	†15Ω	•1.8meg	TP	70Ω	0Ω	
V8	6CG7	†12K	2meg	1200Ω	38Ω	42Ω	†33K	•68K	1200Ω	0Ω
V9	12DQ6B	TP	30Ω	NC	†1200Ω	400K	TP	20Ω	0Ω	TOP CAP †10Ω
V10	17DE4	TP	NC	†360K	NC	†15Ω	TP	20Ω	5Ω	
V11	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †410Ω
V12	19BFP4	30Ω	20Ω	Pin 6 †56K	Pin 10 †56K	Pin 11 •200K	Pin 12 34Ω			
V201	2CY5	1meg	0Ω	4Ω	5Ω	†15Ω	†10K	0Ω		
V202	5CG8	15K	†9400Ω	0Ω	0Ω	4Ω	†2200Ω	†18K	0Ω	240K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V10.

NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Set the Horizontal Hold to the center of its range.

Tune in a TV station and adjust the Horizontal Frequency Slug (B1) until the picture synchronizes horizontally.

Proper adjustment is indicated when it is possible to switch from one channel to another without the picture losing sync.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 screws in rear cover. Remove rear cover.
2. Remove 7 push-on type knobs on side of cabinet.
3. Remove 4 chassis screws and 2 screws holding AC Bracket.
4. Remove 2 screws in upper edge of chassis.
5. Unsolder .001mfd cap at top of chassis edge.
6. Disconnect yoke plug, picture tube socket, speaker leads, and antenna leads.
7. Pull chassis straight out rear.

PICTURE TUBE REMOVAL

It is necessary to remove chassis for picture tube removal.

PHOTOFACT® Folder

ZENITH CHASSIS 16H22, 16H22Q, 16H22U

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ZENITH CHASSIS 16H22, 16H22Q, 16H22U

ZENITH CHASSIS 16H22, 16H22Q, 16H22U

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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DATE 3–62 SET 570 FOLDER 2

SET 570 FOLDER 2

PHOTOFACT® Folder

ZENITH CHASSIS 16H22, 16H22Q, 16H22U

ZENITH CHASSIS 16H22, 16H22Q, 16H22U

MODEL H3310W

TRADE NAME	ZENITH MODELS	TV Chassis	Remote Control Receiver	VHF Tuner	UHF Tuner
	H2715Y; H2717E, R, W; H2753E, W; H2755H, M, R, W; H2756E, R, W; H2760E, R, W	16H22		175-308	
	H2715YU; H2717EU, RU, WU; H2753EU, WU; H2755HU, MU, RU, WU; H2756EU, RU, WU; H2760EU, RU, WU	16H22U		175-307	175-8
	H2762W	16H22		175-302	
	H2762WU	16H22U		175-301	175-8
	H3310E, R, W	16H22Q	S-53193	175-306	
	H3311R, W, Y; H3350E, R, W; H3353W; H3354H, M, R; H3355H	16H22Q	S-53194	175-306	
	† H3388W	16H22Q	S-53194	175-306	

† Combination Model with FM-AM Tuner Chassis 7F20, Stereo Amp. Chassis 8H30, and 4 Speed Automatic Record Changer

MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TUBES	TV: VHF - Sixteen, UHF - Seventeen; FM-AM Tuner 7F20: Seven; Remote Control Receiver S-53193: Six; Stereo Amp. 8H30: Eight; Remote Control Receiver S-53194: Eight
POWER SUPPLY RATING	110-120 Volts AC, 60 Cycle; TV with Remote Control Receiver S-53193: 225 Watts, 1.9 Amp. @ 117 Volts AC (260 Watts, 2.5 Amp. While Tuning)
TUNING RANGE	TV: Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS

The safety glass is an integral part of the picture tube.

FUSE — LOCATION

TV: 5 Amp. (Line) — See "Tube Placement Chart"
7/10 Amp. (LV Supply) — See "Tube Placement Chart"
Fuse Wire (Fil.) — See M3 in photo "Chassis - Bottom View"

Remote Control Receiver:
3/4 Amp. (Line) — Receiver Chassis - Top Side

TUNER OSCILLATOR ADJUSTMENT

Slugs are adjusted by fine tuning knob.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus Control. (See "Tube Placement Chart" for location.)

SYNC STABILITY

Sync stability may be varied by means of a Fringe Lock Control. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

PINCUSHION CORRECTION

Reduce the picture size so that the sides of the raster are visible. Position the magnets so that all sides are straight.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

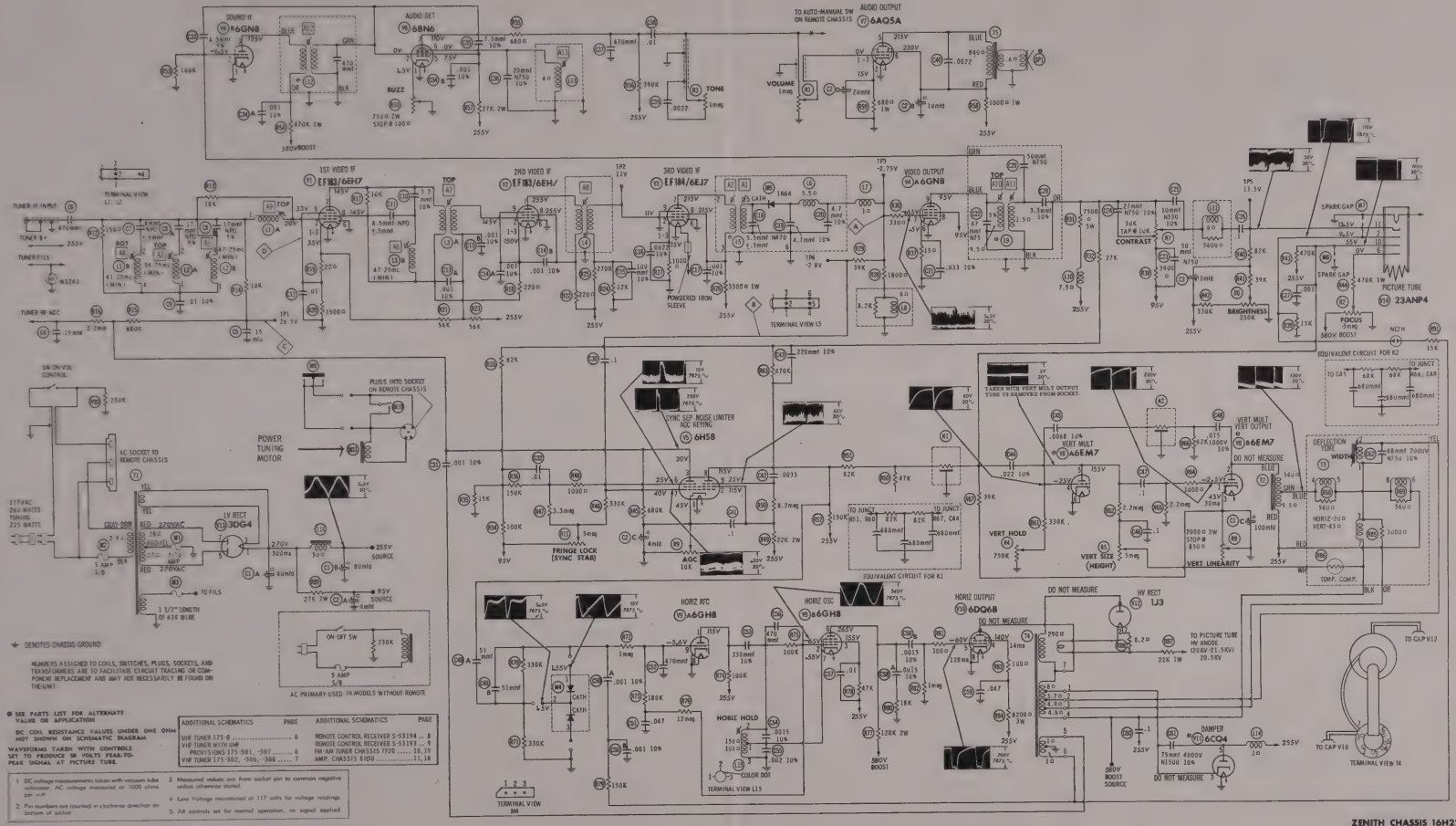
The horizontal oscillator coil slug is used for the horizontal hold.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of LA332

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. ©1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 570 FOLDER 2


SOUND IF
AUDIO DET
AUDIO OUTPUT
TO AUTO-MANUAL SW ON REMOTE CHASSIS
VOLUME
TONE
BUZZ
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO OUTPUT
TUNER IF INPUT
TUNER B+
TUNER F/S
TUNER AGC
CONTRAST
BRIGHTNESS
SPARK GAP
PICTURE TUBE
FOCUS
SW ON-VOL CONTROL
POWER TUNING MOTOR
PLUGS INTO SOCKET ON REMOTE CHASSIS
AC SOCKET TO REMOTE CHASSIS
117VAC 280 WATTS TUNING 225 WATTS
LV RECT
SYNC SEP NOISE LIMITER AGC KEYING
FRINGE LOCK (SYNC STAB)
AGC
VERT MULT
VERT OUTPUT
VERT HOLD
VERT SIZE (HEIGHT)
VERT LINEARITY
DEFLECTION YOKE
WIDTH
HORIZ-PIN VERT-45
TEMP. COMP.
HORIZ AFC
HORIZ OSC
HORIZ OUTPUT
HORIZ HOLD
COLOR BOT
HV RECT
DAMPER
TO PICTURE TUBE HV ANODE (25KV-21.5KV) 20.5KV
TO CAP V12
TO CAP V10
TERMINAL VIEW T4
TERMINAL VIEW L15
TERMINAL VIEW M4
TERMINAL VIEW L3
EQUIVALENT CIRCUIT FOR K2
EQUIVALENT CIRCUIT FOR K1
TAKEN WITH VERT MULT OUTPUT TUBE V9 REMOVED FROM SOCKET.
DO NOT MEASURE
ON-OFF SW
5 AMP S/B
AC PRIMARY USED IN MODELS WITHOUT REMOTE
TO FILS
1 1/2" LENGTH OF #24 WIRE
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated.
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied.
ADDITIONAL SCHEMATICS PAGE
UHF TUNER 175-8 6
VHF TUNER WITH CHP PROVISIONS 175-301, -307 6
VHF TUNER 175-302, -306, -308 7
ADDITIONAL SCHEMATICS PAGE
REMOTE CONTROL RECEIVER S-53194 .. 8
REMOTE CONTROL RECEIVER S-53193 .. 9
FM-AM TUNER CHASSIS 1720 10,19
AMP. CHASSIS 810D 11,18
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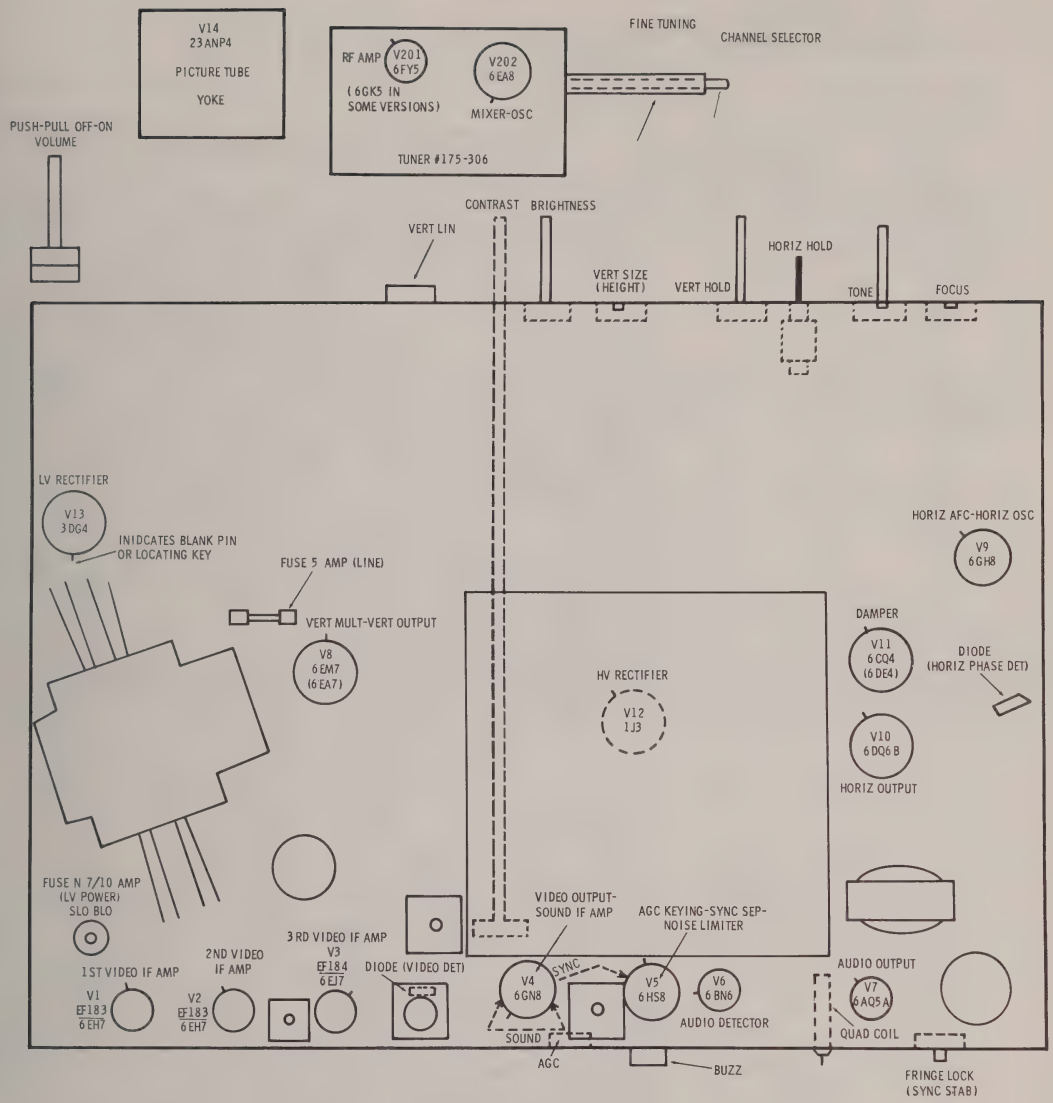
ZENITH CHASSIS 16H22, 16H22Q, 16H22U

TV TUBE PLACEMENT CHART

TOP VIEW



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound **Fuse (5 Amp. Line), Fuse (7/10 Amp., LV Power), V13**

SWEEP FAILURE
No raster, has sound **V9, V10, V11, V12, V14**
No vertical deflection **V8**
Poor vert. linearity or foldover **V8**
Poor horiz. linearity or foldover **V9, V10, V11**
Narrow picture **V9, V10, V11, V14**
Vert. off freq. **V8**
Horiz. off freq. **Diode (Horiz. Phase Det.), V9**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster **V1, V2, V3, Diode (Video Det.), V4**
No pic, no sound, has snow **V201, V202, V1**
No pic, has sound, has raster **V4, V14**
Has pic, no sound **V4, V6, V7**
Overloaded picture **V5**

SYNC FAILURE
No vert. sync **V5**
No horiz. sync **V5**
No vert. or horiz. sync **V5**

ALIGNMENT INSTRUCTIONS
TV

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A13 .... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru 470mmf to TP-2. Low side to chassis. Connect a 56Ω carbon resistor across sweep output.	44MC (10MC Swp.)	39.75MC 41.25MC 45.75MC	Between any two channels	Vert. Amp. thru 10K to point (A). Low side to chassis. (Across Video Det. load.)	A1, A2	Set sweep generator output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC marker positioned as shown in Fig. 1. The 39.75MC marker can fall within ±.5MC of the specified frequency. If the desired response cannot be obtained, check to see that the cores are entering their respective windings from opposite ends of the coils.
2.	High side to ungrounded tube shield floating over Mixer-Osc. Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5, A6	Connect a clip lead from point (B) to chassis. Connect a clip lead from point (C) to point (D). Use high scope gain and adjust A3 thru A6 for MINIMUM marker amplitudes as in Fig.2 A3 controls 39.75MC marker, A4 controls 41.25MC marker, and A5 and A6 control the 47.25MC marker.
3.	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9 and Mixer Plate Coil	Remove clip lead from point (D) and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A7 affects low side of curve and A8 affects the high side. Remove clip leads.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver antenna terminals. Tune in a TV station and adjust the attenuator until the signal is below the limiting level of the Audio Detector as evidenced by a hiss similar to super-regeneration in the sound. Adjust A10, A11, A12, and A13 for maximum sound of best quality. Adjust the Buzz Control for MINIMUM buzz.
If the hiss disappears during alignment, further reduce the signal level until the hiss returns.

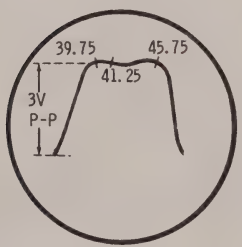


FIG.1

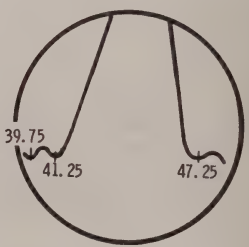


FIG.2

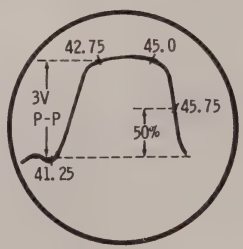
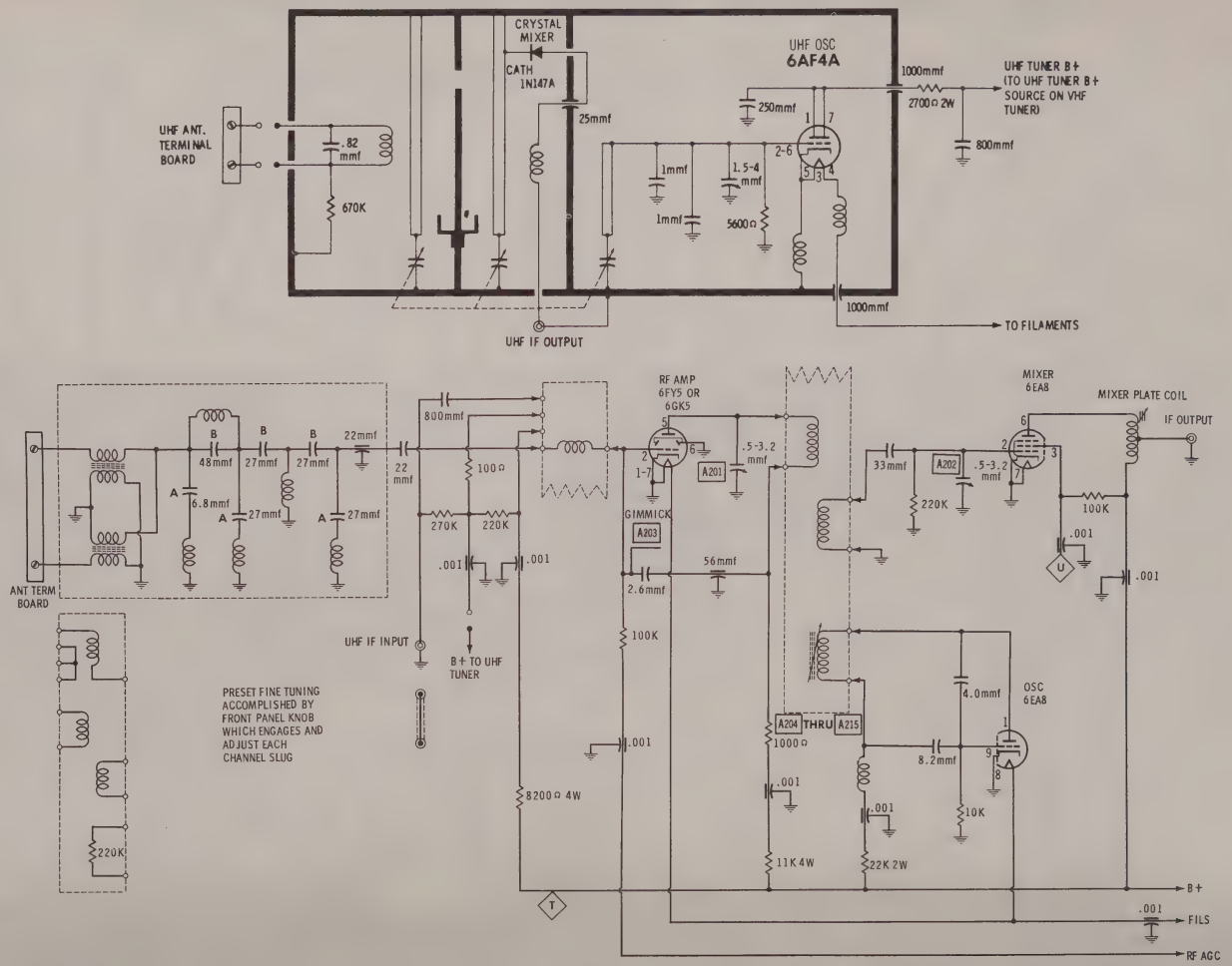


FIG.3

ALIGNMENT IDENTIFICATION PHOTOS PAGES 23, 25

TV CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR, TRANSF. IDENT.



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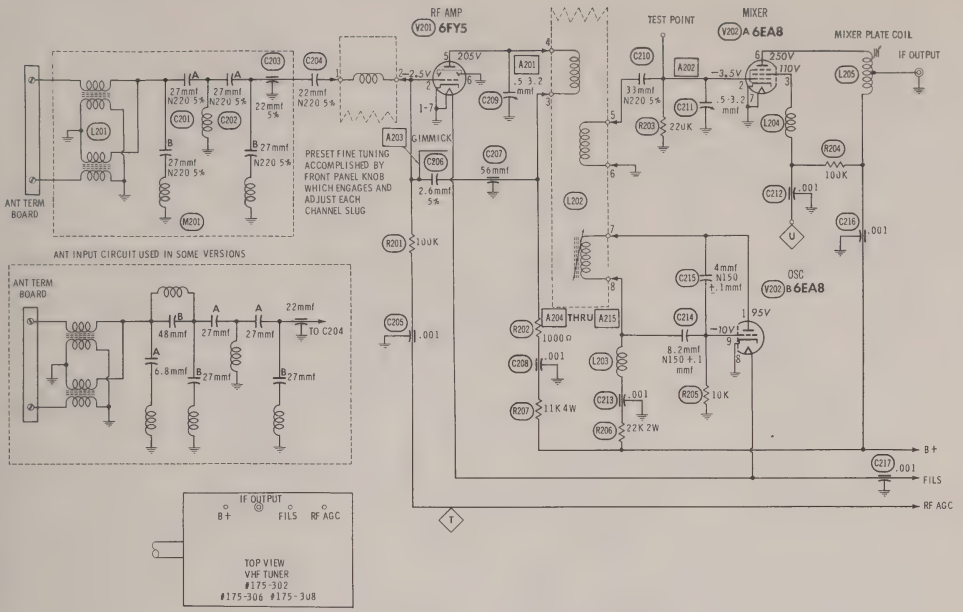
UHF TUNER 175-8, VHF TUNER WITH UHF PROVISIONS 175-301, -307



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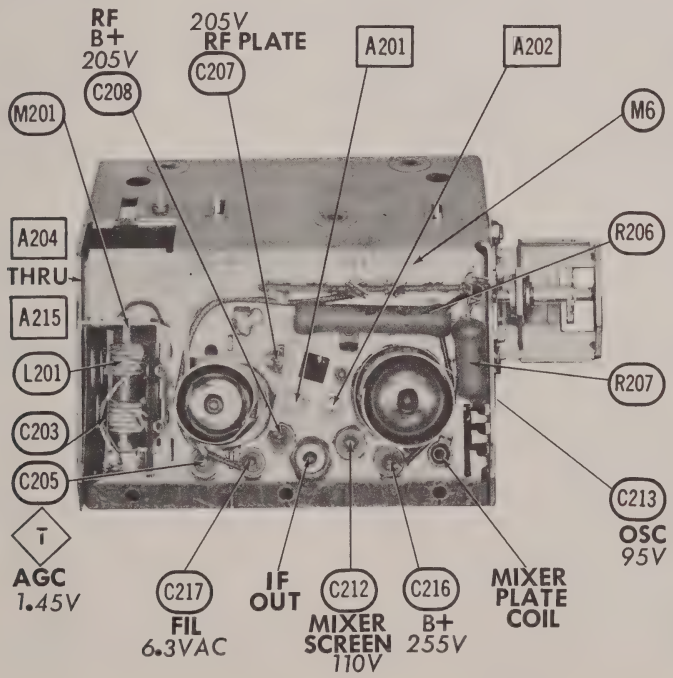
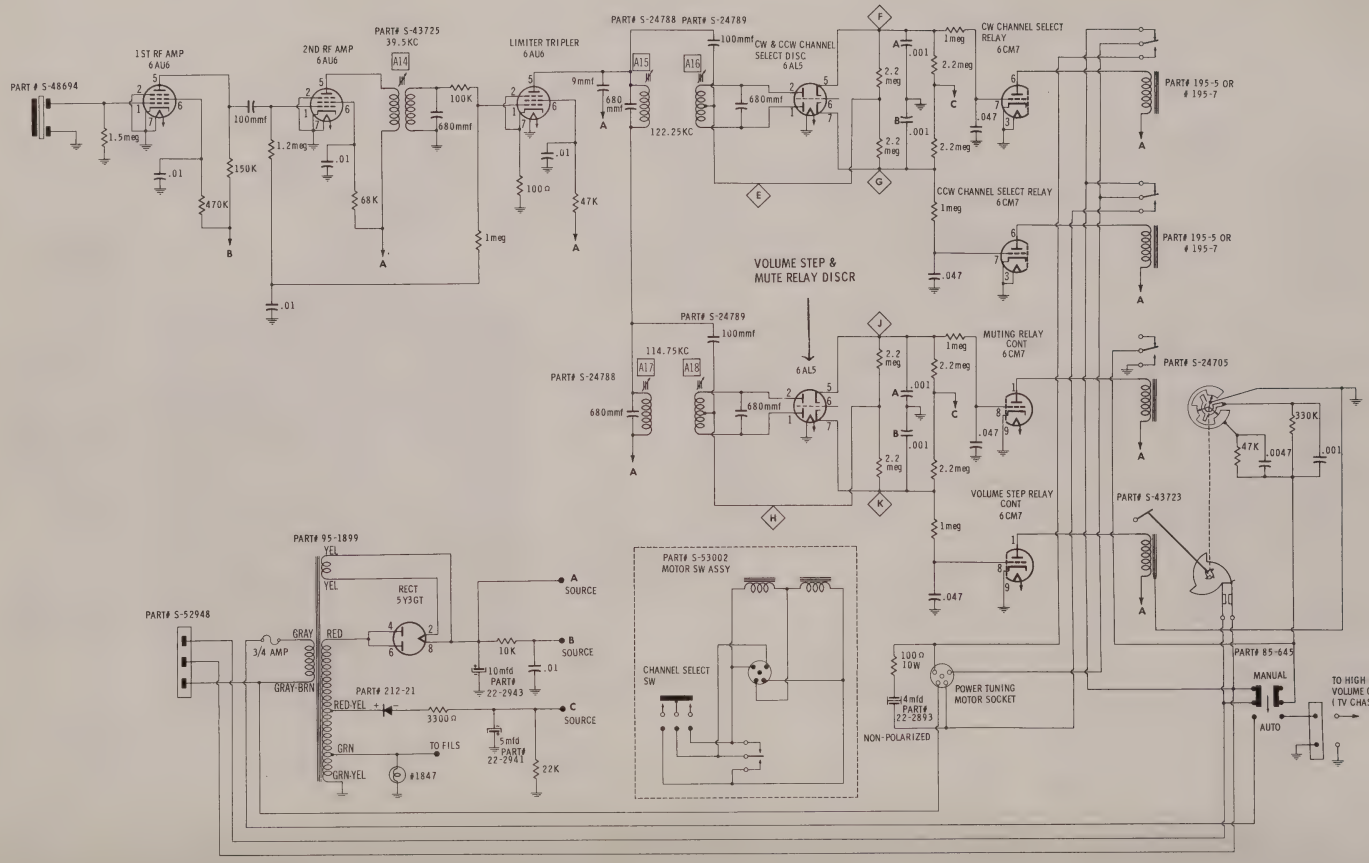
VHF TUNER 175-302, -306, -308



VHF TUNER 175-306 - TOP VIEW

SET 570 FOLDER 2



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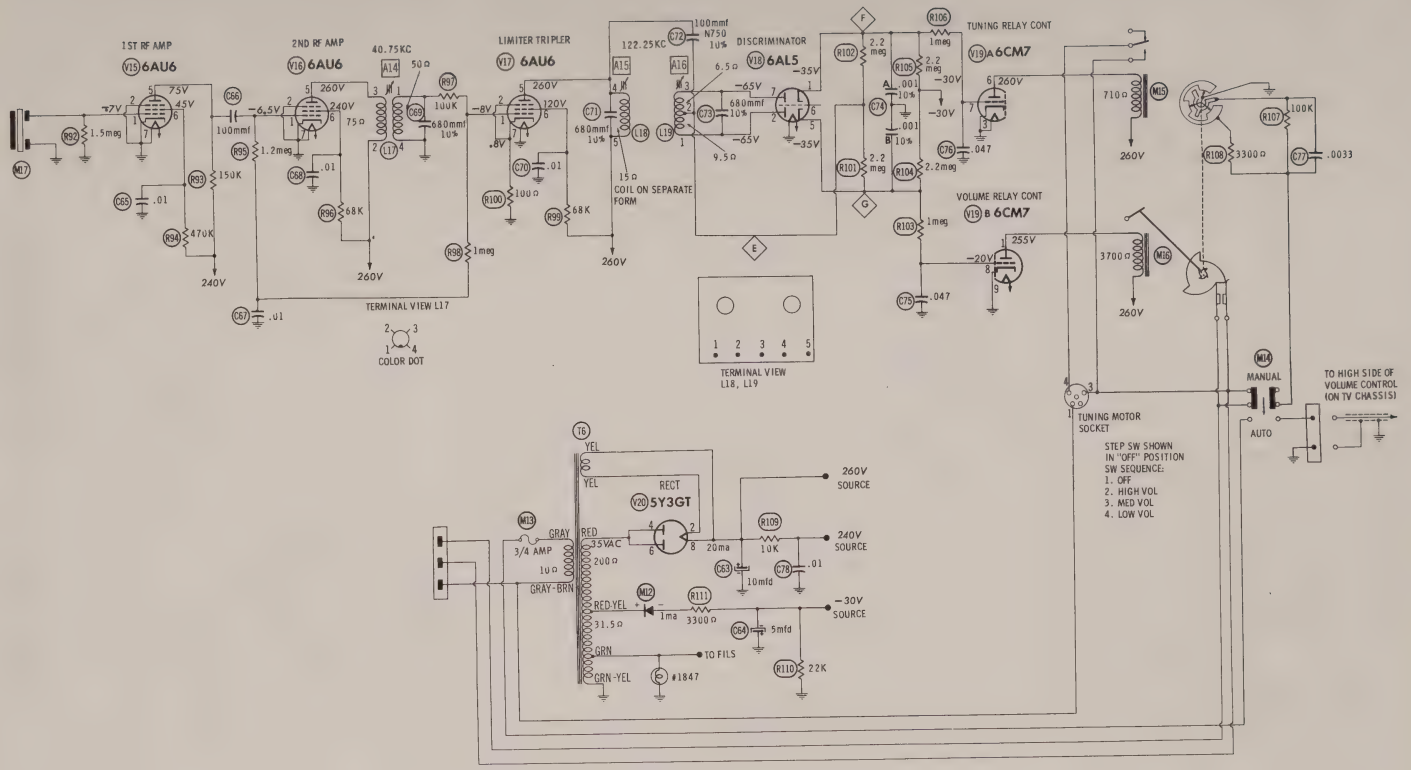
REMOTE CONTROL RECEIVER S-53194



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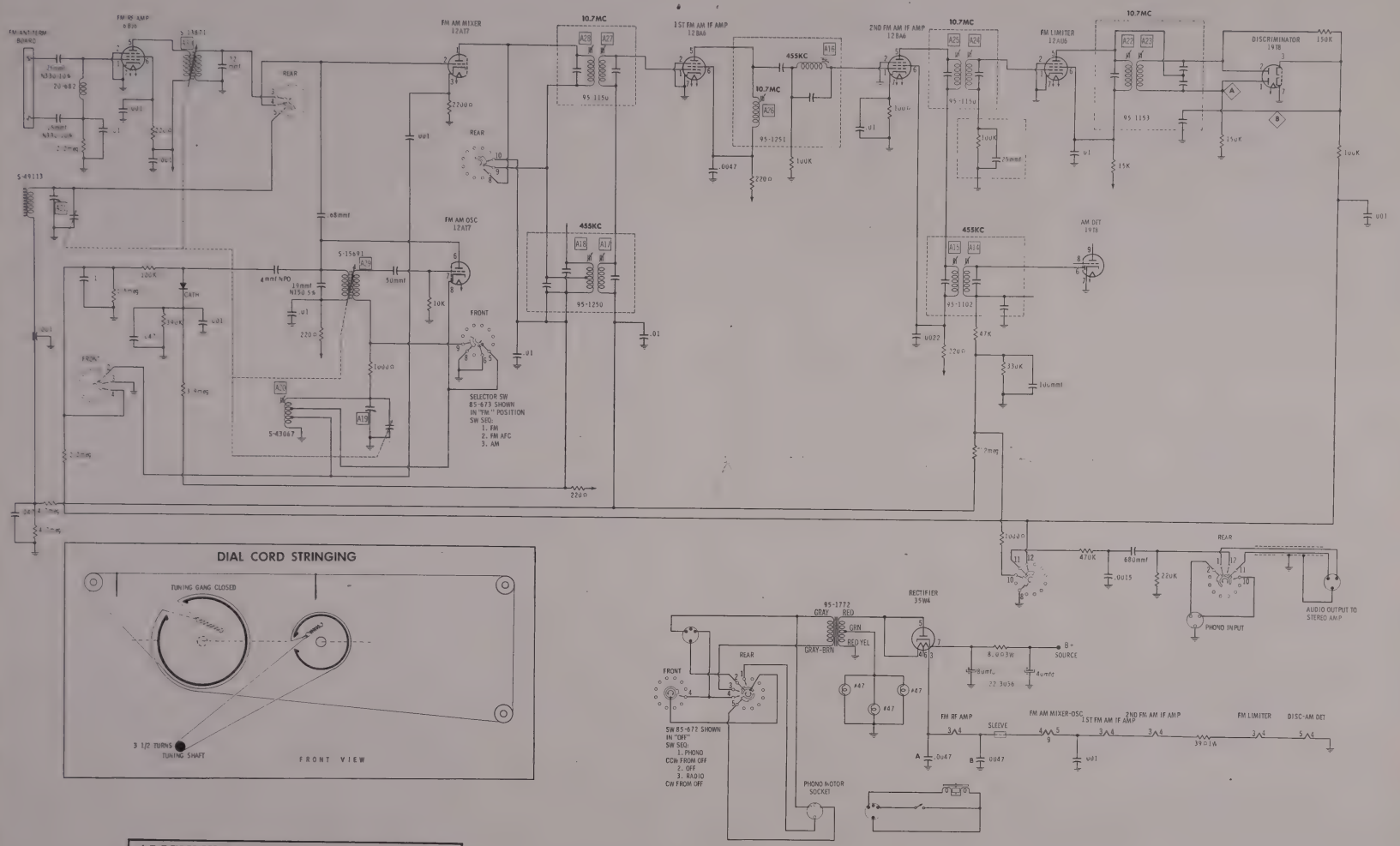
REMOTE CONTROL RECEIVER S-53193

ZENITH CHASSIS 16H22, 16H22Q, 16H22U



ALIGNMENT INSTRUCTIONS PAGE 17

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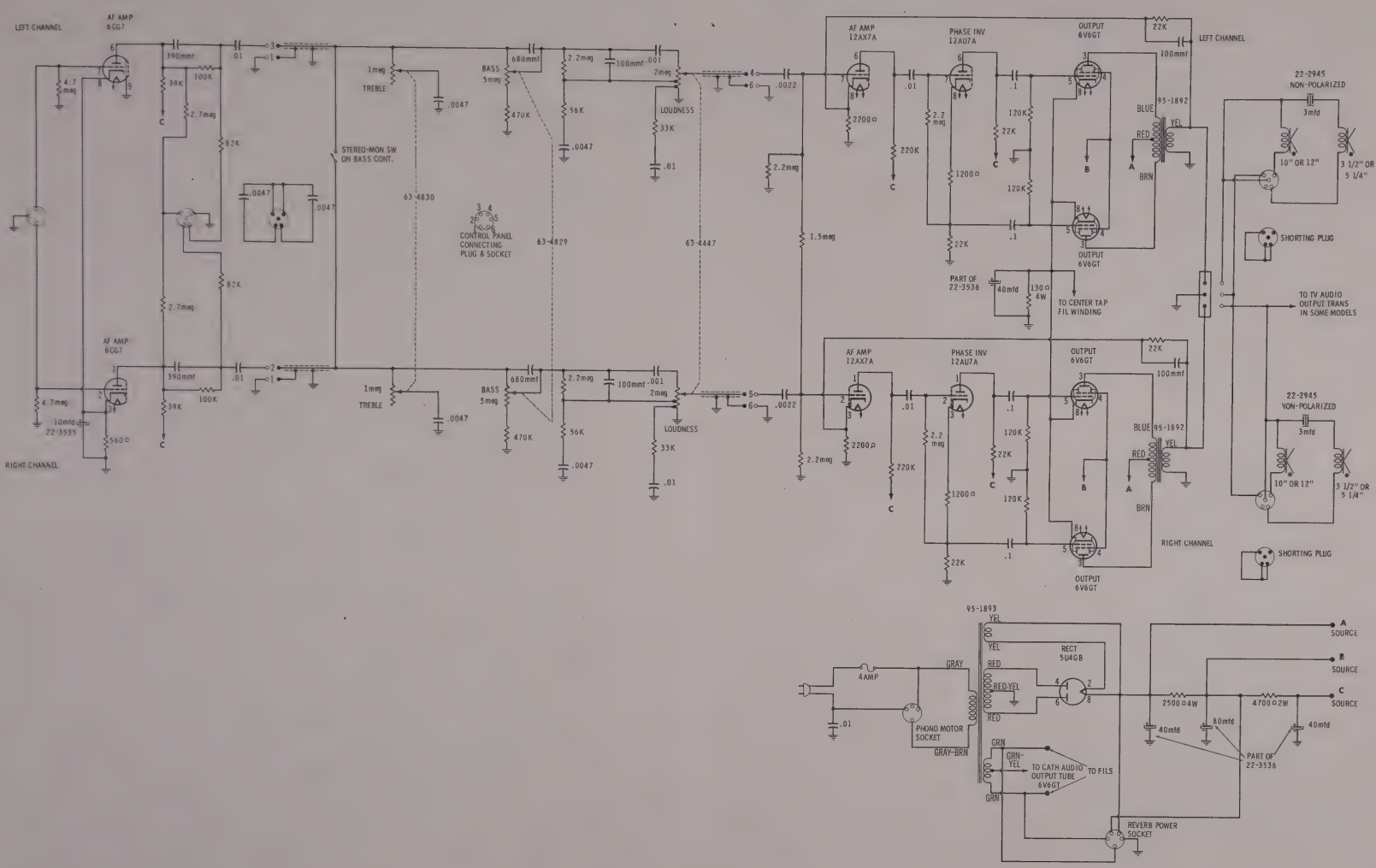
FM-AM TUNER CHASSIS 7F20



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AMP CHASSIS 8H30

VHF TUNER PARTS LIST AND DESCRIPTIONS

175—302,—306,—308

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FY5 *	V202	Mixer - Osc.	6EA8

* 6GK5 in some versions.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201A	27 N220 5%	#22-3553				*		10TCR-Q27
B	27 N220 5%					*		10TCR-Q27
C202A	27 N220 5%	#22-3553				*		10TCR-Q27
B	27 N220 5%					*		10TCR-Q27
C203	22 5%	#22-3270						
C204	22 N220 5%	#22-3371				*		10TCR-Q22
C205	.001		EF-001	MFT-1000		CCF-102	CT280A	
C206	2.6 5%	#22-3483						10TCC-V27
C207	56	#22-3488						
C208	.001		EF-001	MFT-1000		CCF-102	CT280A	
C209	.5-3.2			829-3		CV-1	CT565	
C210	33 N220 5%	#22-3373				*		10TCR-Q22
C211	.5-3.2			829-3		CV-1	CT565	
C212	.001		EF-001	MFT-1000		CCF-102	CT280A	
C213	.001		EF-001	MFT-1000		CCF-102	CT280A	
C214	8.2 N150 ±.1mmf	#22-3369				*		10TCP-V82
C215	4 N150 ±.1mmf	#22-3372				*		
C216	.001		EF-001	MFT-1000		CCF-102	CT280A	
C217	.001		EF-001	MFT-1000		CCF-102	CT280A	

\# Zenith Part Number

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	100K				R205	10K			
R202	1000Ω				R206	22K 2W			
R203	220K				R207	11K 4W	PW5-11K	7W-SQ-11K	
R204	100K								

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant. Trans.	S-49189	Complete Filter Assy. #S-54086 (S-49191 in early production)
L202A	Ant., RF, Mixer & Osc.	S-49202	Channel 2
B	"	S-49203	Channel 3
C	"	S-49204	Channel 4
D	"	S-49205	Channel 5
E	"	S-49206	Channel 6
F	"	S-49207	Channel 7

ITEM No.	USE	ZENITH PART No.	NOTES
L202G	Ant. RF, Mixer & Osc.	S-49208	Channel 8
H	"	S-49209	Channel 9
J	"	S-49210	Channel 10
K	"	S-49211	Channel 11
L	"	S-49212	Channel 12
M	"	S-49213	Channel 13
L203	RF Choke	S-49738	
L204	RF Choke	20-797	
L205	Mixer Plate	S-50720	

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M201	Antenna Filter Assembly	S-54086 S-49191 *	(* Early production)

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC)	ITEM No.	USE	TYPE (RAYTHEON / SYLVANIA)
V1	1st Video IF Amp.	EF183/6EH7	V7	Audio Output	6AQ5A
V2	2nd Video IF Amp.	EF183/6EH7	V8	Vert. Mult. - Vert. Output	6EM7 (6EA7) *
V3	3rd Video IF Amp.	EF184/6EJ7	V9	Horiz. AFC - Horiz. Osc.	6GH8
V4	Video Output - Sound IF Amp.	6GN8	V10	Horiz. Output	6DQ6B
V5	AGC Keying - Sync Sep. - Noise Limiter	6HS8	V11	Damper	6CQ4 (6DE4) *
V6	Audio Detector	6BN6	V12	HV Rectifier	1J3
			V13	LV Rectifier	3DG4

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V14	23ANP4	23ANP4/ATP4 ①	23ANP4 ①	-	23ANP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	■40	400	22-3137	AFH84-57-93	C0890	XC3-41	FP333.2	TMT-3480	TVL-3683
B	▲80	400							
C	▲100	50							
C2A	■4	350	22-3457	AFH4-59	D0480	XC4-1	FP434.5	TMQ-4505	TVLS-4709.2*
B	▲10	400							
C	▲4	150							
D	20	25							
C3	1	350	22-3495	PRS1700	BR145	QT1-1	TC595	TD-2-450	TVA-1700

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C5	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C6	470		DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C7	6 NPO ±.5mmf	#22-2381			C10V6C			
C8A	17 NPO 5%			TCZ-18	C10Q18C	CM-19B-180J	CNO-418	10TCC-Q18
B	17 NPO 5%			TCZ-18	C10Q18C	CM-19B-180J	CNO-418	10TCC-Q18
C9	.01 10%		DI-10000		PM6S1	6DP-2-103	GEM-1611	10TS-S10
C10	1.2 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V12
C11	8.5 NPO ±.5mmf		NPO-DI 8.2		C10V82C			10TCC-V82
C12	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13A	.001 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
B	.001 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C14A	.001 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
B	.001 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C15	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C16	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C17	.001 10%		DI-1000	DD-102	PM6D1	CCD-102 *	GP210	10TS-D10
C18	5.5 N470 ±.5mmf	#22-3221						
C19	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C20	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C21	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333 *	GEM-1613	6TM-S33
C22	47 N75 5%	#22-2467						
C23	50 N750		N750-DI 47	DTN-50	C10Q5U	CCTN-470	CN7-447	10TCU-Q47
C24	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C25	10 N330 10%	#22-3250					*	10TCS-Q10
C26	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C27	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C28	3.3 10%		NPO-SI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C29	50 N750		N750-DI 47	DTN-50	C10Q5U	CCTN-470	CN7-447	10TCU-Q47
C30	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C31	.001 10%		DI-1000	DD-102	PM6D1	CCD-102	GP310	10TS-D10
C32	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	4.3 5%	#22-3315			C10V4C			
C34A	.001 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
B	.001 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C35	7.5 10%			DD-7R5	C10V8C		GP580	
C36	20 N750 10%		N750-DI 20	DTN-20	C10Q2U	CCTN-200	CN7-420	10TCU-Q20
C37	470		DI-471	DD-470	BYA10T47	CCD-471	B-347	10TS-T47
C38	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	.0022		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C40	.0022		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C41	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C42	.0033		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C43	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C44	.022 400V 10%		V84C4S22-10%		PM4S22	4DP-2-223	GEM-1612	4TM-S22
C45	.0068 200V 10%		V84C2D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C46	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C47	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C48	.015 1000V 10%				DPMS16S15	16DP-4-153		10TM-S15
C49A	51		DI-50	DD-510	L10Q50	CCD-450	GP450	10TS-Q50
B	51		DI-50	DD-510	L10Q50	CCD-450	GP450	10TS-Q50
C50A	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
B	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C51	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C52	470		DI-470	DD-473	BYA10T47	CCD-471	B-347	10TS-T47
C53	330 10%		1459-00033		5R5T33	CM-19B-331K	MCB241	MS-333
C54	.0015 10%		1464-0015		5R5D15	CM-19B-152K	MCB456	MS-215
C55	.002 10%		1464-002		5R5D2	CM-19B-202K	MCB457	MS-22
C56	470		DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C57	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C58A	0015 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
B	0015 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C59	047 400V		P488N-047	DD-503	CUD4S47	4DP-3-473	GEM-4147	4TM-P47
C60	1 600V		P488N-1	DF-104	CUD8P1	6DP-4-104	GEM-601	6TM-P10
C61	75 4000V N1500 10%	#22-2954						
C62	68 2000V N750 10%							

Zenith Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No	USE	RESISTANCE	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch (Off-On)	1meg	63-4661	A2L-897, AK-33	C47B-1meg-S/ RS-3/16	B11-137, SK3, or PP6U1-137 (SK3)	PP161, D8-37
R2	Focus	3meg	63-4455	TT-84, or BX-84	A47-3meg-S/ K8S-3	HLC-3	TA36L, or SU-54
R3	Tone	1meg	63-4468	B-86, or (AB-70, AK-11)	Q13-137, or (BU11, CF35, S85, DC1) †	Q11-136	TA161, or U53
R4	Vertical Hold	750K	63-4486	B-86, or (AB-86, AK-11)	A47-750K-S/ K8S-3	HLC-5	U54
R5	Vertical Size (Height)	5meg	63-4660	TT-87, or (AB-87, AK-11)	B47-5meg-S		PTA36L, or TA56L
R6	Brightness	250K	63-4487	B-81, or (AB-81, AK-11)	A47-250K-S/ K8S-3	Q13-130, or (BU11, CF33, S85, DC1) †	U44
R7	Contrast (10K Tap)	30K	63-4489				
R8	Vert Lin. (850Ω Stop)	2000Ω (2W	63-4784	WN-152 *	39-1500 *	112-1500 *	FL-1K *
R9	AGC	10K	63-4095	TT-14, or (AB-14, AK-19)	B47-10K-S	B11-126, TM4	TA14L, or U20
R10	Buzz (100Ω Stop)	750Ω (2W	63-3284	WN-751 **	39-800 **	112-650 **	FL-750 **
R11	Fringe Lock (Sync Stab)	5meg	63-4012	TT-87	B47-5meg-S	B13-141, TM4	PTA36L, or TA56L

† "SNAPTROL" * Use 820Ω 2W Series Resistor. ** Use 100Ω 2W Series Resistor.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R13	150Ω			
R13	18K			
R14	10K			
R15	680K			
R16	2.2meg			
R17	10K			
R18	220Ω			
R19	220			
R20	1500Ω			
R21	56K			
R22	220Ω			
R23	56K			
R24	18K			
R25	270K			
R26	3300Ω 1W			
R27	1000Ω			
R28	1800Ω			
R29	39K			
R30	330Ω			
R31	7500Ω 5W	PW5-7500	5W-SQ-7500	
R32	27K			
R33	82K			
R34	100K			
R35	15K			
R36	150K			
R37	15Ω			
R38	3900Ω			
R39	15K			
R40	82K			
R41	39K			
R42	330K			
R43	470K			
R44	470K 1W			
R45	680K			
R46	330K			
R47	3.3meg			
R48	1000Ω			
R49	22K 2W			
R50	8.2meg			
R51	82K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R52	150K			
R53	100K			
R54	470K 1W			
R55	680Ω			
R56	390K			
R57	27K 2W			
R58	1000Ω 1W			
R59	680Ω 1W			
R60	47K			
R61	330K			
R62	2.2meg			
R63	470K			
R64	1000Ω			
R65	2.4meg			
R66	82K			
R67	39K			
R68	560Ω			
R69	560Ω			
R70	330K			
R71	330K			
R72	1meg			
R73	180K			
R74	100K			
R75	100K			
R76	12meg			
R77	120K 2W			
R78	47K			
R79	150K			
R80	18K			
R81	1000			
R82	1meg			
R83	100Ω			
R84	8200Ω 3W	PW3-8200	3W-SQ-8200	
R85	1000Ω (TC)			#63-4726
R86	22K 1W			
R87	8.2Ω			
R88	27K 2W			
R89	220K			
R90	15K			
R91				

Zenith Part Number

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	1st Video IF	S-53099	TV-133 ▲	6236	RTC-8626	T218	① Complete Assembly Part #S-53096.
B	41.25MC Trap			6226	RTC-8626	T218	② Complete Assembly Part #S-51755.
L2A	39.75MC Trap	S-53053 ①	TV-152	6225	RTC-8556	T218	③ Complete Assembly Part #S-52688.
B	47.25MC Trap		TV-153	6225	RTC-8556	T218	④ Wound on 8200Ω Resistor.
L3A	2nd Video IF	S-51753					⑤ Complete Assembly Part #S-49892.
B	47.25MC Trap		TV-130	6234	RTC-8555	T217	⑥ Wound on 56000Ω Resistor.
L4	3rd Video IF	S-51754 ②					⑦ Complete Assembly Part #S-49892.
L5	4th Video IF	S-52687 ③					▲ Includes Trap.
L6	Peaking (90uh)	S-41879	TV-181	6177	RTC-8594	T304	
L7	RF Choke (6uh)	S-21888	BC-565	4610	RTC-8530	T859	
L8	Peaking (170uh)	S-52645 ④	TV-184 ▲	6180 ▲	RTC-8597 ▲	T310 ▲	
L8A	4.5MC Trap	S-50341 ⑤	TV-120	1482 IFT	RTC-8556	T253	
B	Sound Takeoff						
L10	Peaking (250uh)	S-16081	TV-185	6181	RTC-8598	T315	
L11	Peaking (170uh)	S-43818 ⑥	TV-184 †	6180 †	RTC-8597 †	T310 †	

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit # PART No.	Miller # PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L13	Sound IF	S-41899 ⑦	TV-149	7101		TC235	▲ Shunt with 8200Ω Resistor.
L13	Quadrature	S-47703	TV-121	1480	RTC-8605	T251	† Shunt with 5600Ω Resistor.
L14	RF Choke (10uh)	S-32777	BC-566	4612	RTC-8522	T260	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L15	Horiz. Osc. (Horiz. Hold)	S-47150	TV-169	6324	RTC-8630	H3-6		T190	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE (@ CURRENT 1000 ~)	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L16	.300A	50Ω	1.1 Hy.	95-1682	C-2896	C-2343	26C44	C-34X	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	SEC. 4	SEC. 5	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ① 1.9A	520VCT @ 300A DC	3V ⑨ 3A	6.3V ⑩ 8.2A			95-1695					

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	95-1656	A-3033 ① *	A-8148 ① *	26S23	A-131X	
T3	Yoke (Horiz. 13MH) (92° (Vert. 45MH)	95-1768	MDF-124	DY-39A ② *	Y-39 ② *	Y-82-1	
	Rear Cover and Centering Device	S-43091 or S-23237					
	Yoke Mounting Bracket	S-51634					
T4	Horiz. Output	S-49918	HVO-189 *			D-201	

① Cut and tape green lead.
② Use original damping network, if necessary. Connect 1K Resistor (R85) from Yoke Terminals #1 and #3 to Horizontal Output Transformer Terminal #3. Connect Thermal Resistor to Vertical Size (Height) Control.

*COMPONENT CONNECTION DATA

ORIGINAL → REPLACEMENT ↓	HV TRANSFORMER: Original Connections 1 2 3 4 5 6 7	VERTICAL OUTPUT: Original Connections			YOKE: Original Connections 1 2 3 4 5 6 7 8	YOKE PLUG: TO YOKE TERM 1 2 3 4 5 6 7 8
		Blue	Green	Red		
MERIT	1 2 3 4 5 6 7	Blue	Yel.	Red		
STANCOR		Blue	White	Red	1 2 3 4 5 6 7 8	
THORDARSON		Blue	Red	Green	1 2 3 4 5 6 7 8	
TRIAD		Blue	Red	Yel.		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	8600Ω	3-4Ω	95-1569	A-2900	A-3850	24S52	S-12Z	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	GUAM PART No.	NOTES
SP1	2 1/4" x 6 1/4"	PM	3-4Ω	49-945 ①		① Models H3310, H3311, H2715, H2717.
	6" x 9"	PM	3-4Ω	49-851 ②③	69A3	② Models H2753, H2762, H3354, H3355.
	4"	PM	14-16Ω	49-818 ④	4A1S214	③ Model H2755.
	5" x 7"	PM	6-8Ω	49-823 ⑤	5TA1Z5.5	④ Models H2756, H3350 (2 required).
	6" x 9"	PM	6-8Ω	49-831 ⑥	6SA1Z6.8	⑤ Models H2760, H3353 (2 required).
	12"	PM	6-8Ω	49-853 ⑦	12AB5A	⑥ Model H3388 (2 required).
	5 1/4"	PM	3-4Ω	49-896 ⑦	5ZA1	⑦ Model H3388 (2 required).

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	Vert. Integrator		87-8	
K2	Vert. Feedback		87-7	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	N	7/10A S/B	136-38	62-31	333,700 (N 7/10A S/B)	348010	N 7/10	HN 1/2 - 3/4
M2	3AG	5A (125V S/B)	136-48	63-3575	313005 (3AG 5A 125V S/B)	387001	MDX5	6408
M3	1 1/2"	length #24 wire						

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M4	*	103-20 *	6GC1 *		* Horiz. AFC, Dual Selenium, Common Cathode Type
M5	1N64 †	103-23 †		1N64 †	† Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M6	Tuner	175-306	VHF Complete
		175-306	VHF Complete
		175-302	VHF Complete
		175-307	VHF with UHF Provisions
		175-301	VHF with UHF Provisions
		175-8	UHF
M7	Spark Gap	S-42787	
M8	Spark Gap	91-1681	
M9	Switch	85-585 or 85-870	Channel Selector (Power Tuning Assembly)
M10	Switch	S-53001	Motor Switch Assembly (Power Tuning Assembly)
M11	Motor	141-459	Motor, Tuner Drive (Power Tuning Assembly)
	Corrector Magnet	S-46005	Anti Precession (2 required)

CABINETS

(When Ordering Cabinets, Specify Model, Chassis & Color)

Cabinet Part No.	Model
14-3464	H2715Y, YU ; H3311Y
14-3467	H2717E, EU ; H3310E
14-3465	H2717R, RU ; H3310R, H3311R
14-3465	H2717W, WU ; H3310W, H3311W
14-3757	H2753E, EU
14-3756	H2753W, WU
14-3887	H2755H, HU
14-3866	H2755M, MU
14-3865	H2755R, RU
14-3864	H2755W, WU
14-3870	H2756E, EU
14-3868	H2756R, RU

Cabinet Part No.	Model
14-3868	H2756W, WU
14-3760	H2760E, EU
14-3758	H2760R, RU
14-3758	H2760W, WU
14-3863	H2762W, WU
14-3504	H3350E
14-3503	H3350R
14-3502	H3350W
14-3877	H3353W
14-3880	H3354M
14-3879	H3355R
14-3761	H3388W

CABINET PARTS

(When Ordering Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	46-2703	VHF Channel Selector, H2715 Series
Knob	46-3695	VHF Channel Selector, H2717/53/55/56/60/62 Series
Knob	8-47420	VHF Channel Selector, H3310/11/50/53/54/55/88 Series
Knob	8-45239	UHF Tuning, UHF Models
Knob	8-45238	UHF Dial, UHF Models
Knob	8-52904	VHF Fine Tuning, H2715Y, YU; H2717E, EU
Knob	8-54050	VHF Fine Tuning, H2717R, RU; H2717W, WU; H2753/55/56/60 Series
Knob	8-49930	VHF Fine Tuning, H2762W, WU
Knob	8-50095	VHF Fine Tuning, H3310/11/50/53/55/88 Series
Knob	8-45716	Volume
Knob	8-50939	Tone, Vert. Hold, Brightness
Knob	8-51726	Contrast, All Models (except H2762W, WU)
Knob	8-50935	Contrast, Models H2762W, WU
Knob	46-2509	Horiz. Hold
UHF Drive Belt	8-52670	UHF Models (except H2762WU)
UHF Drive Belt	8-46962	Model H2762WU

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8685 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8235
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8465 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

REMOTE CONTROL RECEIVER PARTS LIST

S—53193

TUBES

ITEM No.	USE	GENERAL ELECTRIC TYPE	RAYTHEON TYPE	SYLVANIA TYPE
V15	1st RF Amplifier		6AU6	
V16	2nd RF Amplifier		6AU6	
V17	Limiter - Tripler		6AD6	
V18	Discriminator			6AL5
V19	Tuning-Volume Relay Control			6CM7
V20	Rectifier			5Y3GT

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REMOTE CONTROL RECEIVER PARTS LIST (Continued)

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C63	10	350	22-2943	PRS1620	BR1045	QT1-6	TC62	TD-10-450	TVA-1604
C64	5	50	22-2941	PRS1310	BBR5-50	QT1-3	TC30	TD-5-50	TVA-1303

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C65	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C66	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C67	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C68	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C69	680 10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C70	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C71	680 10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C72	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C73	680 10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C74A	.001 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
B	.001 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C75	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C76	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C77	.0033		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C78	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R92	1.5meg			
R93	150K			
R94	470K			
R95	1.2meg			
R96	68K			
R97	100K			
R98	1meg			
R99	68K			
R100	100Ω			
R101	2.2meg			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R102	2.2meg			
R103	1meg			
R104	2.2meg			
R105	2.2meg			
R106	1meg			
R107	100K			
R108	3300Ω			
R109	10K			
R110	22K			
R111	3300Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L17	40.75KC	S-43725					
L18	Discriminator (Pri.)	S-24788					
L19	Discriminator (Sec.)	S-27789					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					
	PRI.	SEC. 1		ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	117V @ .31A	220V @ .020A, Tap @ 34V @ .001A, 6.3V @ 1.8A		95-1898				R-138A	
	SEC. 2	SEC. 4	SEC. 5						
	5V @ 2A								

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT (Measured)	ZENITH PART No.	RCA PART No.	SARKES TARZIAN PART No.	
M12	.001A	212-21		12	

FUSES

ITEM No.	TYPE.	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M13	3AG	3/4A S/B	136-41		313-750 (3AG 3/4A S/B)	357001	MDL 3/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M14	Switch	85-545	Auto-Manual (DPDT Slide Type)
M15	Relay	195-5 or 195-6	Channel Selector
M16	Relay	S-45860	Step (Volume), Includes Stepper and Switch Assy. #S-43848
M17	Microphone	S-48693	

AM-FM TUNER ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Use only enough sweep generator output to provide a usable pattern on scope.
Suggested Alignment Tools: A14 thru A18, A20, A22 thru A28 .. GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2528, 2543, 2544, 2545
A19, A21 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil	A14, A15, A16, A17, A18	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A19	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A20	"
4.	"	1400KC	Tune to 1400KC Signal	"	A21	Adjust for maximum output. Steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .05mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point Ⓐ. Common to chassis.	A22	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A23	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7.	High side thru .05mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	"	"	DC probe to pin 1 (grid) of FM Limiter. Low side to chassis.	A24, A25, A26, A27, A28	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .05mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. Amp. thru 27K to point Ⓐ. Low side to chassis.	A22	Adjust for maximum gain and symmetry of response similar to Fig. 1.
6.	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A23	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.
7.	High side thru .05mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	"	"	Vert. Amp. to pin 1 (grid) of FM Limiter. Low side to chassis.	A24, A25, A26, A27, A28	Adjust for maximum gain and symmetry of response similar to Fig. 1.

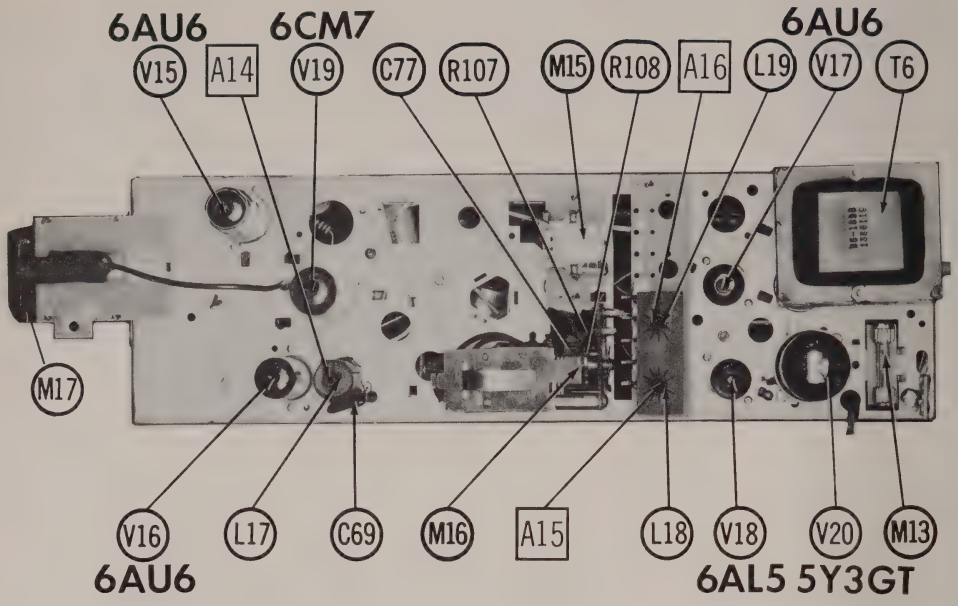
FM RF ALIGNMENT - SELECTOR IN FM POSITION

Remove line antenna.

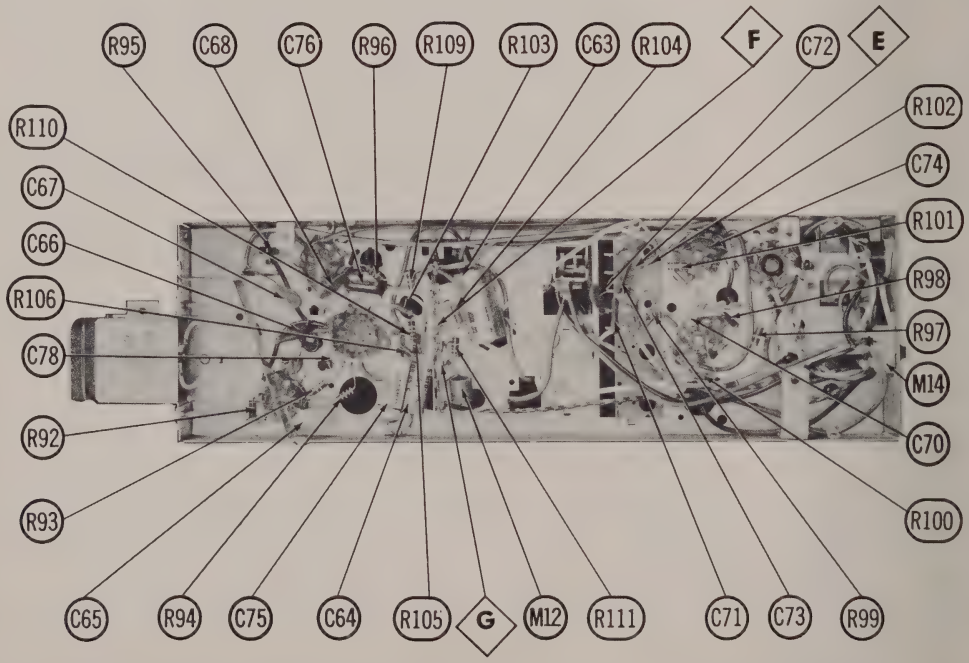
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Across FM antenna terminals with 120Ω in each lead.	98MC	(FM) 98MC	DC probe to pin 1 (grid) of FM Limiter. Common to chassis.	A29, A30	Adjust for maximum deflection.

FIG. 1

FIG. 2



REMOTE CONTROL RECEIVER S-53193 - TOP VIEW



REMOTE CONTROL RECEIVER S-53193 - BOTTOM VIEW

REMOTE CONTROL RECEIVER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

RECEIVER S-53193

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru 100K to pin 1 (grid) of 1st 40KC Amp. Low side to chassis.	40.75KC (Unmod.)	DC probe thru 1meg to point (E). Common to chassis.	A14, A15	Adjust for maximum deflection.
2.	"	"	DC probe to point (F). Common to point (G).	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

PRE-ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

RECEIVER S-53194

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru 100K to pin 1 (grid) 1st RF Amp. Low side to chassis.	39.5KC (Unmod.)	DC probe thru 1meg to point (E). Common to point (G).	A14	Adjust for maximum deflection.
2.	"	40.75KC	"	A15	"
3.	"	"	DC probe to point (F). Common to point (G).	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
4.	"	38.25KC	DC probe thru 1meg to point (H). Common to point (K).	A17	Adjust for maximum output.
5.	"	"	DC probe to point (J). Common to point (K).	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

REMOTE CONTROL RESISTANCE MEASUREMENTS

RECEIVER S-53193

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V15	6AU6	1.5meg	0Ω	FIL	FIL	††160K	††480K	0Ω		
V16	6AU6	2.3meg	0Ω	FIL	FIL	††75Ω	††68K	0Ω		
V17	6AU6	100K	100Ω	FIL	FIL	††15Ω	††68K	100Ω		
V18	6AL5	1.8meg	2.4meg	FIL	FIL	1.8meg	NC	2.4meg		
V19	6CM7	††3700Ω	TP	0Ω	FIL	FIL	††710Ω	3meg	2.8meg	0Ω
V20	5Y3GT	NC	¶ 50K	NC	232Ω	NC	232Ω	NC	¶ 50K	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 8 OF V20. NC NO CONNECTION TP TIE POINT

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201, A202, A203 .... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A204 thru A215 ..... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect the negative lead of a 4.5 volt bias supply to point Ⓣ . Positive to chassis.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓣ . Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias, adjust A203 to obtain MINIMUM response on the scope.
2.	"	213MC	211.25MC 215.75MC	13		A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
		207MC	205.25MC 209.75MC	12		A205	
		201MC	199.25MC 203.75MC	11		A206	
		195MC	193.25MC 197.75MC	10		A207	
		189MC	187.25MC 191.75MC	9		A208	
		183MC	181.25MC 185.75MC	8		A209	
		177MC	175.25MC 179.75MC	7		A210	
		85MC	83.25MC 87.75MC	6		A211	
		79MC	77.25MC 81.75MC	5		A212	
		69MC	67.25MC 71.75MC	4		A213	
		63MC	61.25MC 65.75MC	3		A214	
		57MC	55.25MC 59.75MC	2		A215	

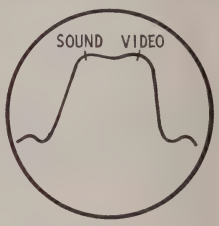
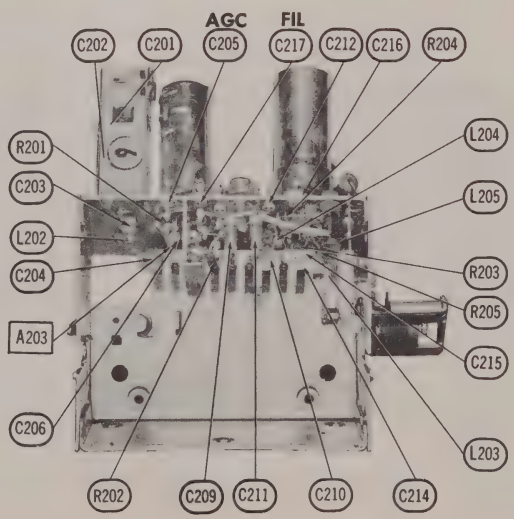


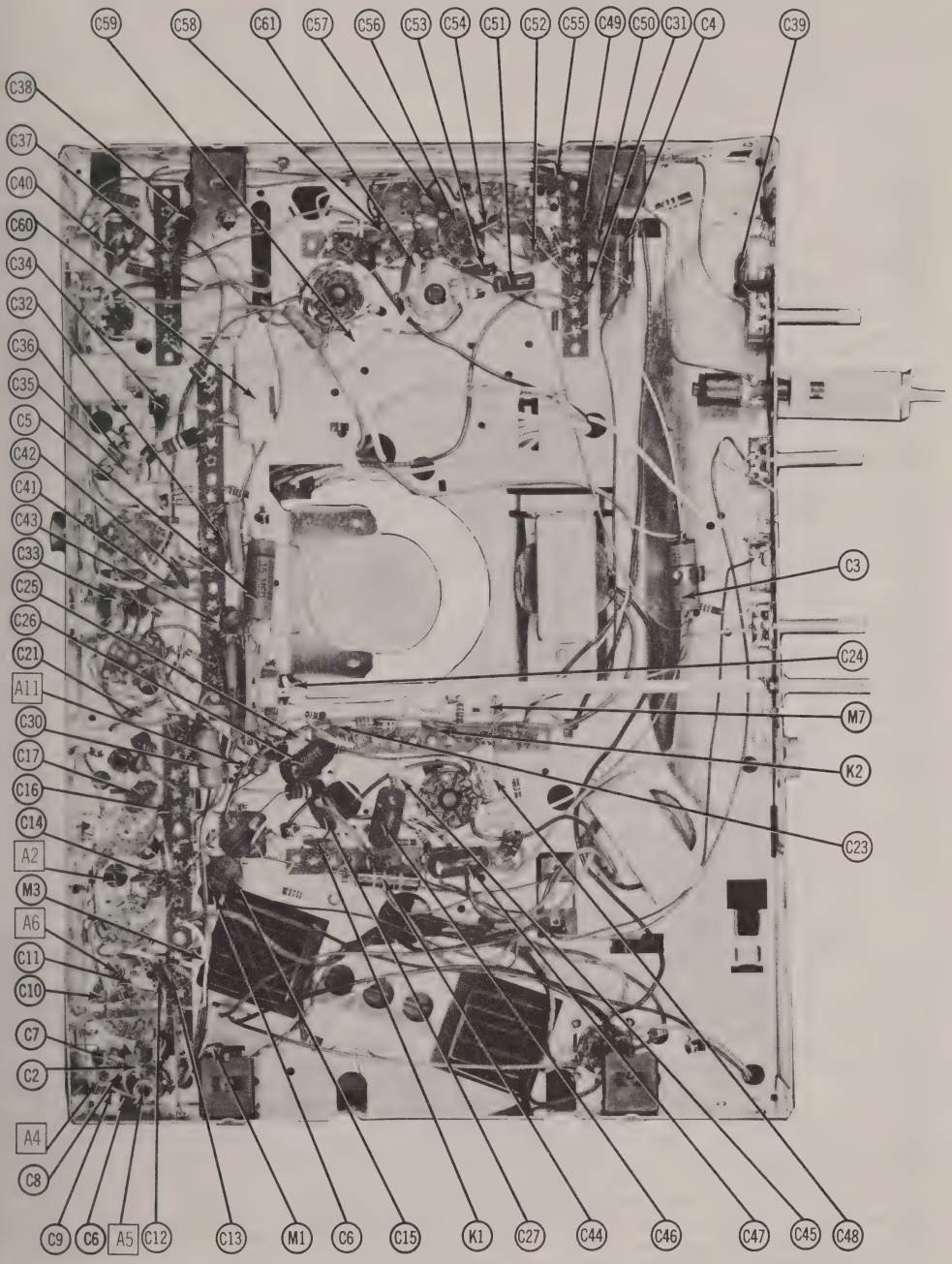
FIG. 201

VHF OSCILLATOR ADJUSTMENT

The Fine Tuning mechanically engages oscillator slug for adjustment on channel used (one for each channel).



VHF TUNER 175-306—SIDE VIEW

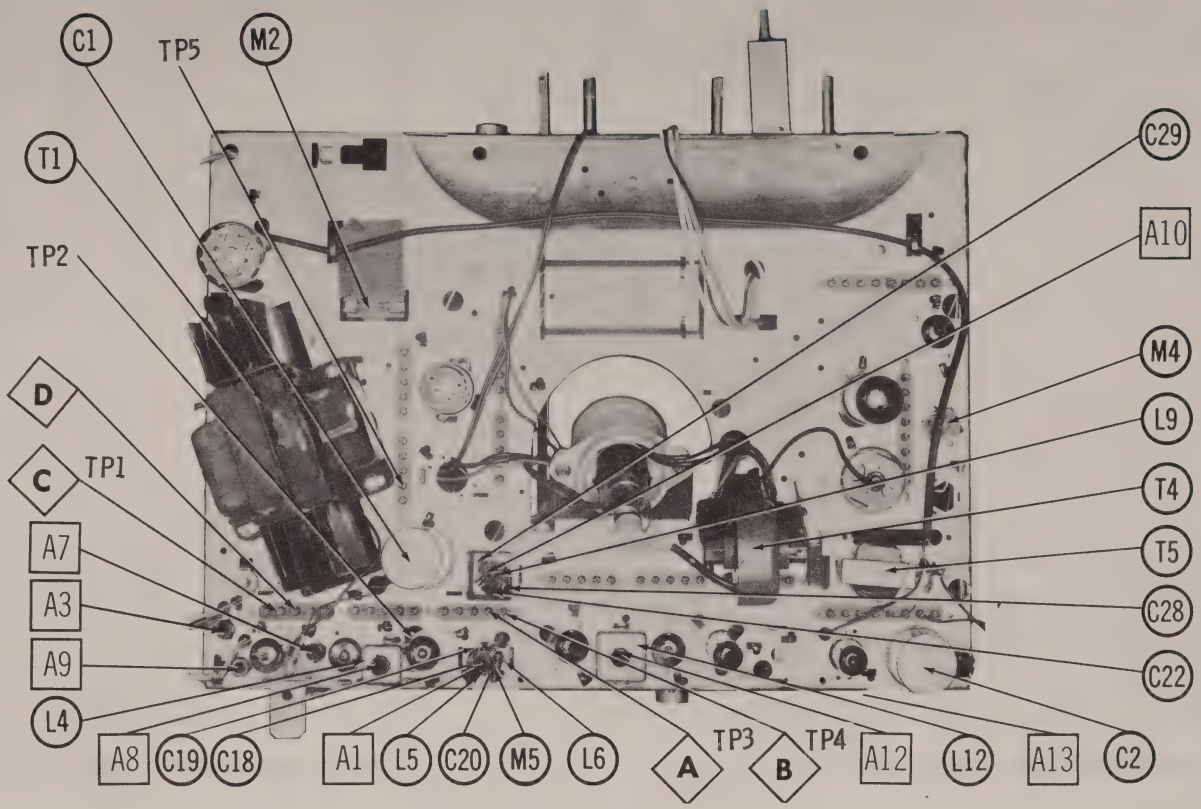


TV CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.

TEST POINTS

TP1	26.5V	AGC
TP2	11V	3RD VIDEO IF GRID
TP3	-2.75V	VIDEO DET LOAD

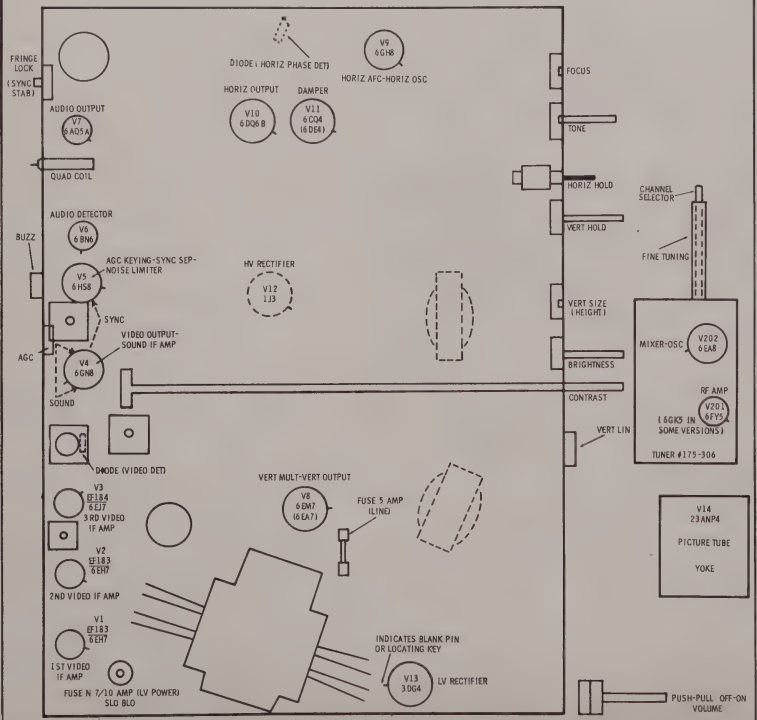
TP4	-2.8V	NOISE LIMITER COUPLING
TP5	13.5V	PICTURE TUBE CATHODE



TV CHASSIS - TOP VIEW

TV TUBE PLACEMENT CHART

BOTTOM VIEW

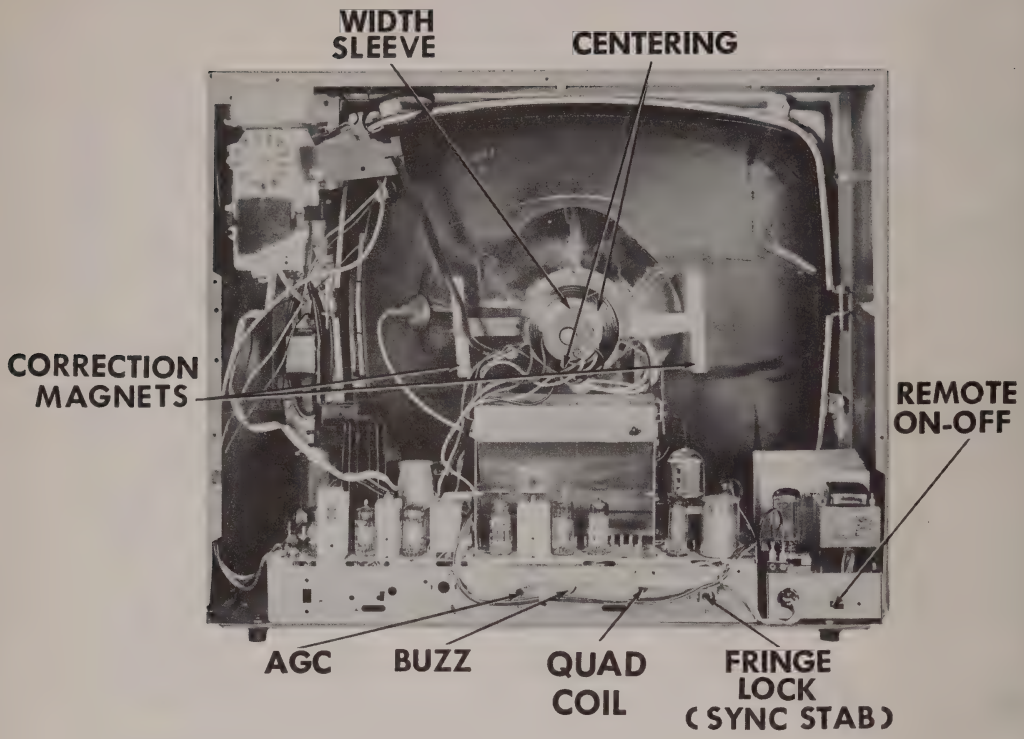


TV RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF183 / 6EH7	NC	1.3meg	1522Ω	FIL	FIL	0Ω	▲220Ω	▲220Ω	1500Ω
V2	EF183 / 6EH7	INF	†56K	NC	FIL	FIL	0Ω	†270Ω	†270Ω	INF
V3	EF184 / 6EJ7	1000Ω	12K	NC	FIL	FIL	0Ω	†3350Ω	†3350Ω	0Ω
V4	6GN8	0Ω	100K	†470K	FIL	FIL	15Ω	2100Ω	†27K	†6000Ω
V5	6HS8	●6500Ω	†22K	685K	FIL	FIL	†180K	400K	†80K	8meg
V6	6BN6	●260Ω	.3Ω	FIL	FIL	†27K	4Ω	†390K		
V7	6AQ5A	0Ω	680Ω	FIL	FIL	†1890Ω	†1050Ω	NC		
V8	6EM7	2.2meg	†400Ω	● 1300Ω	● 540K	●†4.3meg	0Ω	FIL	FIL	
V9	6GH8	†100K	100K	†47K	FIL	FIL	†120K	100Ω	0Ω	1.6meg
V10	6DQ6B	TP	FIL	TP	†8350Ω	1meg	NC	FIL	0Ω	TOP CAP †8Ω
V11	6CQ4	NC	NC	¶3.3meg	NC	†51Ω	NC	FIL	FIL	
V12	1J3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †298Ω
V13	3DG4	¶30K	NC	¶30K	TP	27Ω	NC	28Ω	TP	
V14	23ANP4	FIL	15K	Pin 6 ● 430K	Pin 10 34K	Pin 11 ● 140K	Pin 12 FIL			
V201	6FY5	0Ω	3meg	FIL	FIL	†12K	0Ω	0Ω		
V202	6EA8	†22K	220K	†100K	FIL	FIL	†50Ω	0Ω	0Ω	10K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 3 OF V13.
▲ MEASURED FROM PIN 1 OF V2.
† MEASURED FROM PIN 3 OF V11.

NC NO CONNECTION
TP TIE POINT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Oscillator Coil Slug is used for the Horizontal Hold Control. See "Tube Placement Chart" for location.

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

The Horizontal Hold is equipped with a stop which limits rotation to 270° with the knob on the shaft. To adjust, remove the knob and adjust by turning the shaft until the picture is synchronized to the point where it is virtually impossible to disrupt horizontal synchronization when switching from channel to channel. Install knob with the pointer centered between the stops.

DISASSEMBLY INSTRUCTIONS

CHASSIS AND PICTURE TUBE ASSEMBLY REMOVAL - MODEL H3310

1. Remove push-on type knob and fine tuning knob from front.
2. Remove rear cover (7 screws).
3. Remove plug connecting VHF Tuner assembly to remote control receiver.
4. Remove 5 leads to VHF Tuner (push-on connectors) and IF Output cable.
5. Remove 2 screws and remove tuner assembly.
6. Unplug cable from remote control receiver chassis to TV chassis and unplug 2 slip-on connectors.
7. Remove 3 bolts from bottom of remote control receiver.
8. Remove remote control receiver.
9. Remove 4 bolts holding TV chassis from bottom.
10. Remove 2 screws holding volume control bracket.
11. Remove 4 bolts holding picture tube mounting bracket and disconnect speaker.
12. Remove TV chassis and picture tube assembly.

PHOTOFACT® Folder

PRODUCTION CHANGE BULLETIN

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 512

GENERAL ELECTRIC CHASSIS M6

GENERAL ELECTRIC Models M304VGR, M305VGR, M306VWD, M307VWD, M308VBG, M310VEB, VVY, M311VVY, M420VBZ, VEB, VMB, VOA, M421VEB, VMD, M424VMD, M426VGL, VWD, M427VWD, M430VBN, M431VBN, M432VMD, VOA, M433VMD, VOA, M738VMD, VOA, VWD, M739VOA, VWD, M740VMD, VMP, VOA, M741VMD, VMP, M750VMD, VMP, VWD, M751VMD, VWD, M782VMD, VWD, M738VWD, R306VWD, R310VVY, R420VMD, R432VMD, VOA, R738VMD, VMP, VWD, R740VCD, VMD, VWD, R741VMD, R750VCD, VMD, VWD (Chassis M6) were covered in PHOTOFACT Folder 2 - Set 512.

Models CAM602VVY, CAM604VBG, CAM620VVY, CAM720VWD, CBM304VEB, CBM602VBG, CBM603VVY, CBM620VVY, CCM620VVY, CDM304VWD, CDM306VVY, CDM620VVY, CEM304VWD, M602VGR, M603VGR, M604VBG, VBN, M605VBG, M606VEB, VTS, VVY, M607VTS, VVY, M610VGR, M611VGR, M614VCL, VOA, VWD, M615VWD, M720VMD, VOA, VWD, M721VMD, M730VMD, VWD, M731VMD, VWD, M732VMD, VOA, M733VMD, VOA, M734VMD, VWD, M752VCD, VWD, M753VCD, VWD, R604VBG, R606VVY, R610VVY, SAM304VEB, VGR, SAM306VVY, VWA, VWD, SAM308VWA, SAM310VEB, VVY, SAM418VWD, SAM420VVY, SAM426VGL, VWD, SAM602VVY, SAM604VBG, VVY, SAM606VBG, SAM610VVY, SAM720VMD, VWD, SAM721VWD, SAM724VMP, VWD, SAM725VMP, VWD, SAM732VMD, VOA, VWD, SAM738VMD, VOA, VWD, SAM739VMD, VWD, SAM740VMD, VWD, SAM741VMD, SAR306VWA, SAR604VVY, SAR732VMD, VWD, SAR740VMP, SAR750VMP, SBM304VVY, SBM602VVY, SBR306VWD, SCM304VGR, SDM304VVY, SEM304VVY, SGM304VVY (Ch. M6) are electrically similar. The following changes are made by the manufacturer during late production.

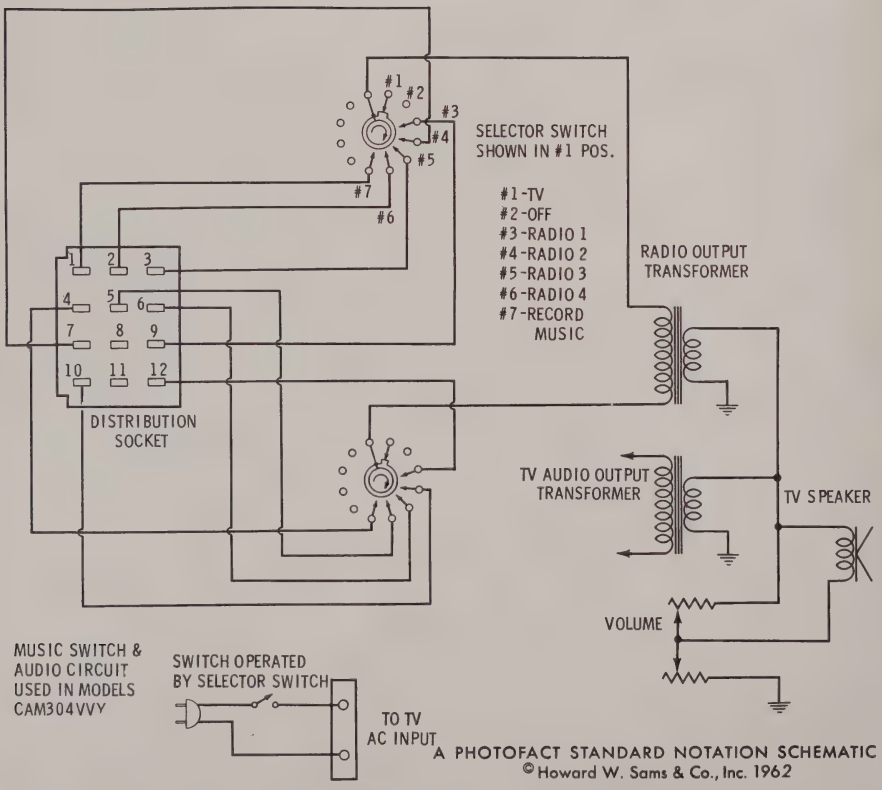
COMPONENT CHANGES

Chassis Code 017M6 & below	R69 is 12K 2 watt.
Chassis Code 018M6 & above	R69 is 13K 2 watt.
Chassis Code below 019M6	C62 is 300mmf @ 4000 volts.
Chassis Code 019M6 & above	C62 is 315mmf @ 4000 volts (Part #WT18X341). If it becomes necessary to replace this unit, use the 315mmf replacement.
Chassis Code 022M6 & below	C61 is 5000mmf.
Chassis Code 023M6 & above	C61 is .022mfd.
Chassis Code 024M6 & above	C64 is connected between Pins 4 and 6 of V13 (5U4GB) instead of from Pin 4 to ground.
Chassis Code 028M6 & above	K2 (Audio Coupling) is changed. The 10000mmf capacitor enclosed in this unit is changed to 5000mmf.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

Chassis Code 031M6 & above	R15 (68K) is deleted and replaced with a jumper wire. VHF Tuner WT86X98 with either a brown or red color dot uses a 68K ½ watt resistor connected from the Tuner AGC to the junction of R7 and R8. VHF Tuner WT86X98 with an orange color dot, the 68K resistor is not used.
Chassis Code 037M6 & above	R55 is decreased from 560K to 390K.
Chassis Code 106M6 & above	C62 is decreased from 315mmf to 280mmf.
Chassis Code 109M6 & above	K4 (Vert. Integrator) is changed. The 150mmf capacitor enclosed in this unit is changed to 100mmf.
Chassis Code 112M6 & above	V10 (Horizontal Output) is replaced with a Type 6FW5 Horizontal Output Tube. The circuit changes are as follows: Pin 4 of the 6DQ6 becomes Pin 8 on the 6FW5; Pin 8 of the 6DQ6 becomes Pin 3 on the 6FW5; Pin 5 of the 6DQ6 becomes Pin 1 on the 6FW5; The top cap of the 6DQ6 becomes Pin 5 on the 6FW5.
Chassis Code 119M6 & above	The Horizontal Output Tube (6FW5) is replaced with a Type 6DQ6.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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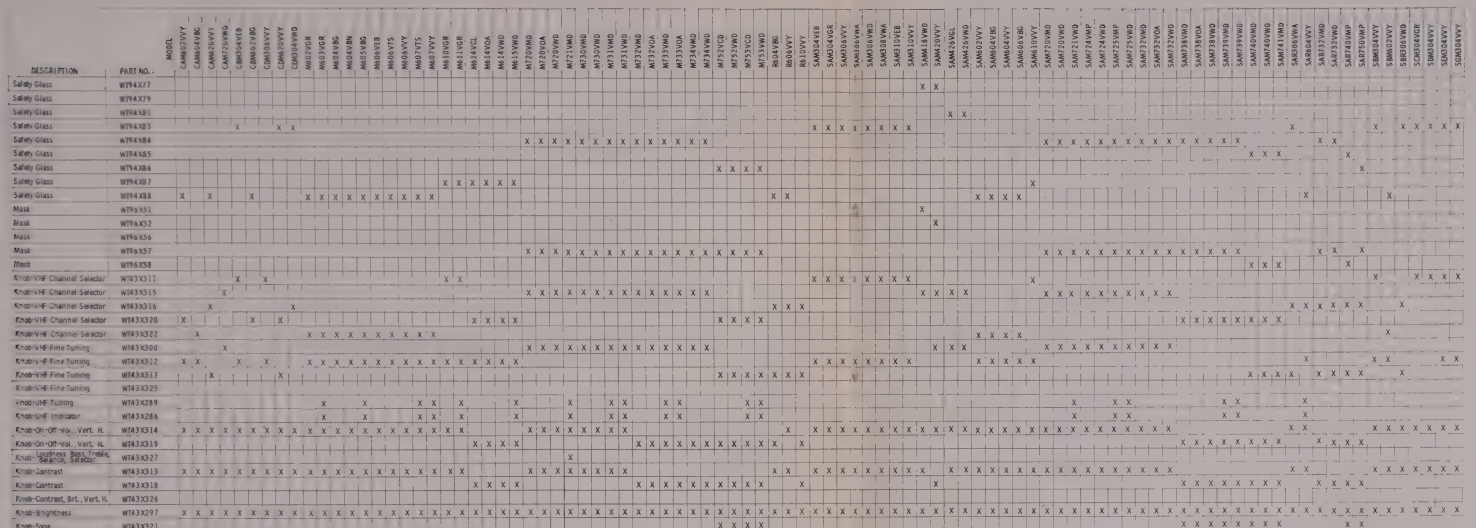


CABINET MODEL NO.	CABINET PART NO.
CAM602VVY	WT103X465
CAM604VBG	WT103X464
CAM620VVY	WT103X474
CAM720VWD	L-WT103X370
CDM304VEB	L-WT103X443
CBM602VBG	WT103X472
CBM603VVY	WT103X467
CBM620VVY	WT103X474
CCM620VVY	WT103X474
CDM304VWD	WT103X284
CDM306VVY	WT103X286
CDM620VVY	WT103X474
CEM304VWD	WT103X284
M602VGR	WT103X466
M603VGR	WT103X467
M604VBG	WT103X472

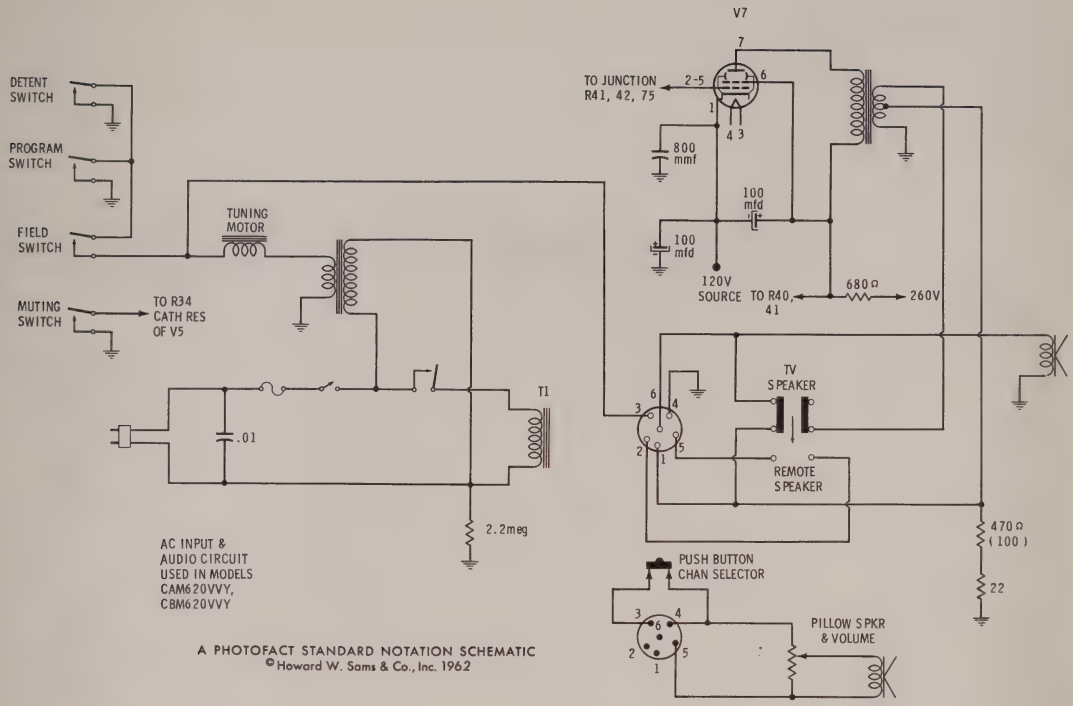
CABINET MODEL NO.	CABINET PART NO.
M604VBN	WT103X468
M605VBG	WT103X473
M606VEB	WT103X469
M606VTS	WT103X470
M606VVY	WT103X474
M607VTS	WT103X471
M607VVY	WT103X475
M610VGR	WT103X336
M611VGR	WT103X336
M614VCL	WT103X338
M614VOA	WT103X334
M614VWD	WT103X335
M615VWD	WT103X335
M720VMD	WT103X341
M720VOA	WT103X342

CABINET MODEL NO.	CABINET PART NO.
M721VMD	WT103X341
M730VMD	WT103X304
M730VWD	WT103X305
M731VMD	WT103X304
M731VWD	WT103X305
M732VMD	WT103X330
M732VOA	WT103X331
M733VMD	WT103X330
M733VOA	WT103X331
M734VMD	WT103X304
M734VWD	WT103X305
M752VCD	WT103X361
M752VWD	WT103X360
M753VCD	WT103X361
M753VWD	WT103X360
R606VVY	WT103X465

CABINET MODEL NO.	CABINET PART NO.
R610VVY	WT103X337
SAM304VEB	WT103X287
SAM304VGR	WT103X283
SAM306VVY	WT103X299
SAM306VWA	WT103X319
SAM306VWD	WT103X284
SAM308VWA	WT103X319
SAM310VEB	WT103X287
SAM310VVY	WT103X286
SAM418VWD	WT103X294
SAM420VVY	WT103X344
SAM426VGL	WT103X317
SAM426VWD	WT103X316
SAM602VVY	WT103X474
SAM604VBG	WT103X472
SAM604VVY	WT103X474

CABINET MODEL NO.	CABINET PART NO.
SAM606VBG	WT103X472
SAM610VVY	WT103X337
SAM720VMD	WT103X341
SAM720VWD	WT103X343
SAM721VWD	WT103X343
SAM724VMP	WT103X356
SAM724VWD	WT103X357
SAM725VMP	WT103X356
SAM725VWD	WT103X357
SAM732VMD	WT103X330
SAM732VOA	WT103X331
SAM732VWD	WT103X347
SAM738VMD	WT103X309
SAM738VOA	WT103X309
SAM738VWD	WT103X308

CABINET MODEL NO.	CABINET PART NO.
SAM739VMD	WT103X307
SAM739VWD	WT103X308
SAM740VMD	WT103X341
SAM740VWD	WT103X364
SAM741VMD	WT103X310
SAR306VWA	WT103X319
SAR732VMD	WT103X330
SAR740VMP	WT103X354
SAR750VMP	WT103X355
SBM304VVY	WT103X286
SBM602VVY	WT103X474
SCM304VGR	WT103X283
SDM304VVY	WT103X286
SEM304VVY	WT103X286
SGM304VVY	WT103X286



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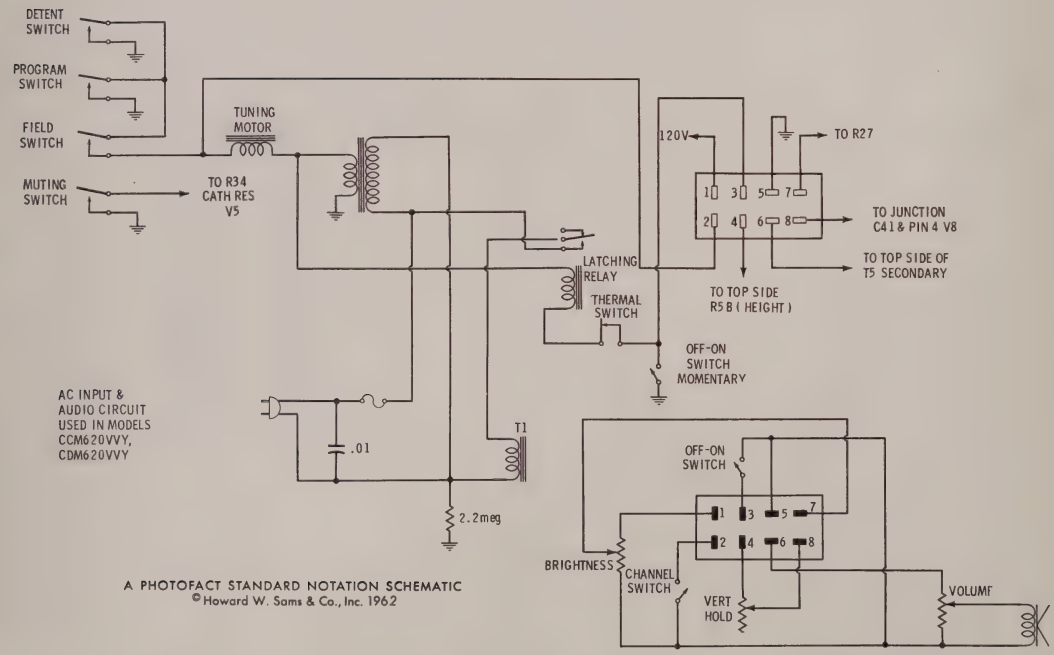

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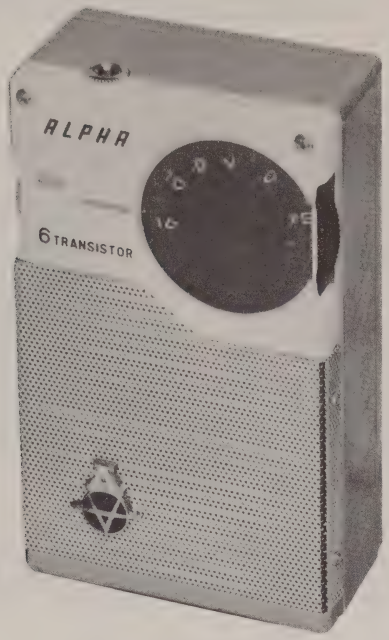
ALPHA MODEL Q-62



TRADE NAME	Alpha Model Q62
IMPORTER	Alfred C. Toepfer, Inc., 1 Broadway, New York 4, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	7MA@9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC
	10MA@9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1, A2, A3, A5..... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537

A4, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	"
5.	"	600KC	600KC Signal.	"	A7	Adjust for maximum output by moving antenna coil turns along ferrite core. Repeat steps 2 thru 5.

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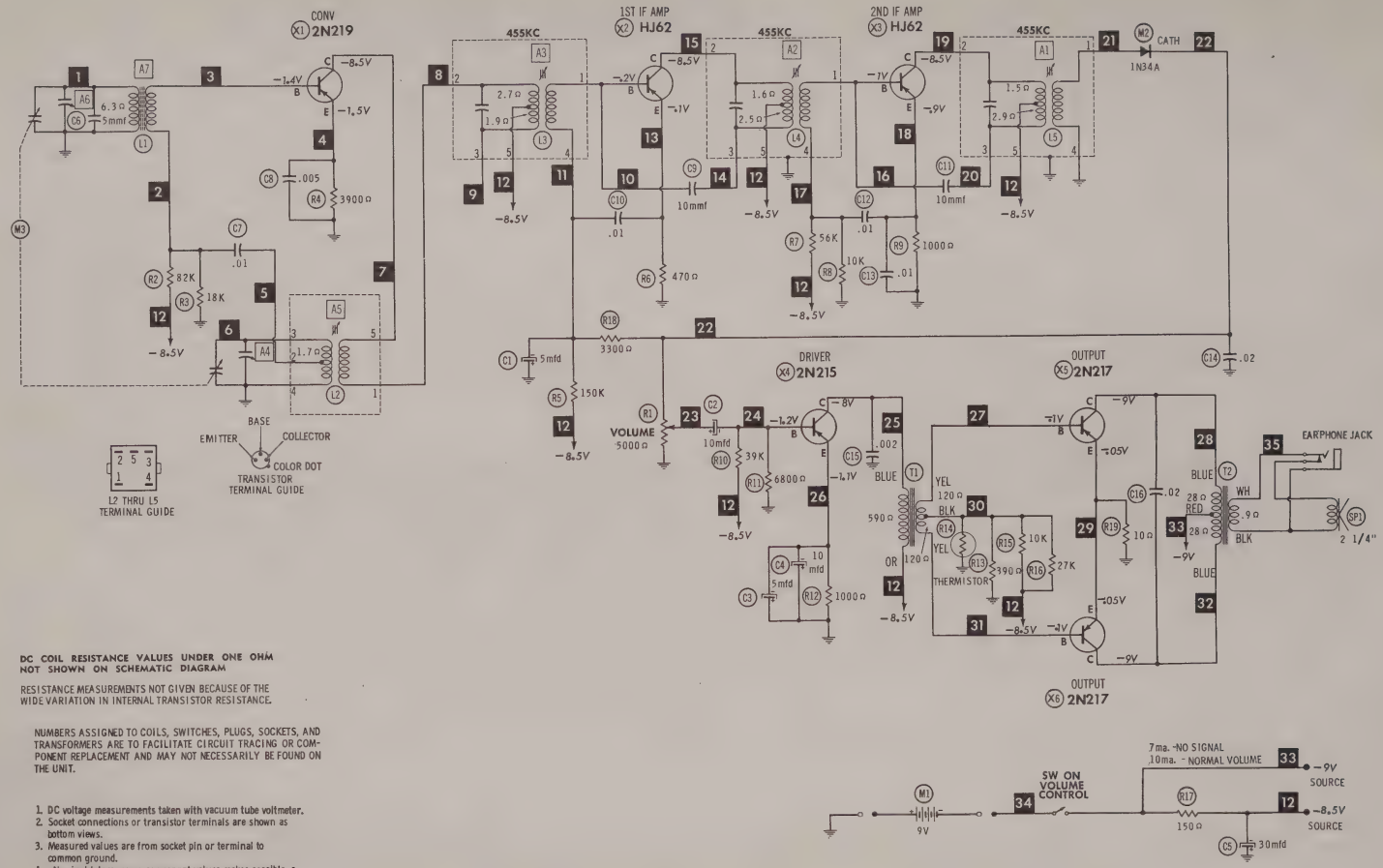

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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ALPHA MODEL Q-62

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2N219	Converter	2N219	2N486	PNP
X2	HJ62	1st IF Amplifier	2N410	2N483	PNP
X3	HJ62	2nd IF Amplifier	2N410	2N483	PNP
X4	2N215	Driver	2N215	2N362	PNP
X5	2N217	Output	2N217	2N361	PNP
X6	2N217	Output	2N217	2N361	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ALPHA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	5	6		PTT21	NLW5-15	MT1-3	TT6X5	MLV5-6	TE-1084
C2	10	3		PTT6	NLW10-6	MT1-5	TT3X10	MLV10-3	TE-1053
C3	5	6		PTT21	NLW5-15	MT1-3	TT6X5	MLV5-6	TE-1084
C4	10	3		PTT6	NLW10-6	MT1-5	TT3X10	MLV10-3	TE-1053
C5	30	10		PTT43	NLW30-15	MT1-14	TT15X30	MLV40-12	TE-1158

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	5mmf		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C6	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C7	.005		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C8	10mmf		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C9	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C10	10mmf		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C11	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C12	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C13	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C14	.002		BPD-002	DM-202	BYA10D2	CCD-202	B-220	5HK-D20
C15	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ALPHA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4						Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	82K				R11	6800Ω			
R3	18K				R12	1000Ω			
R4	3900Ω				R13	390Ω			
R5	120K				R14	Temp. Comp.			
R6	470Ω				R15	10K			
R7	56K				R16	27K			
R8	10K				R17	150Ω			
R9	1000Ω				R18	3300Ω			
R10	39K				R19	10Ω			

PRINTED BOARD

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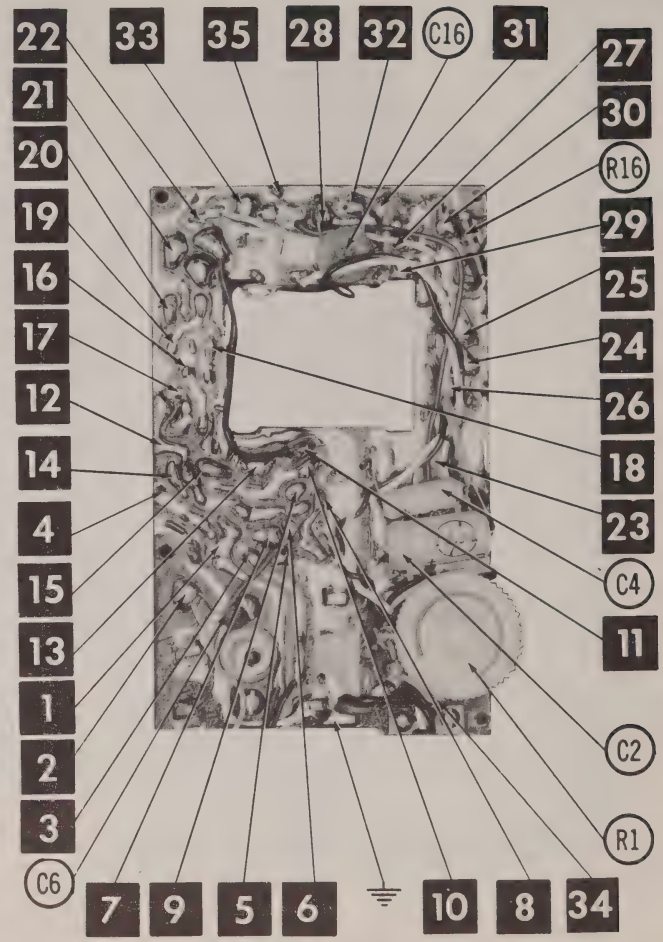


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ALPHA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick						
L2	Osc.						
L3	1st IF						
L4	2nd IF						
L5	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ALPHA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1, 3	1	RLI-051					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ALPHA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1000Ω CT	10-12Ω	RLO-040					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ALPHA PART No.	QUAM PART No.	
SP1	2 1/4"	PM	10-12Ω	SPM-061	22A06Z8	

BATTERIES

ITEM No.	VOLTAGE	ALPHA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ALPHA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	1N34A			1N34A	Detector

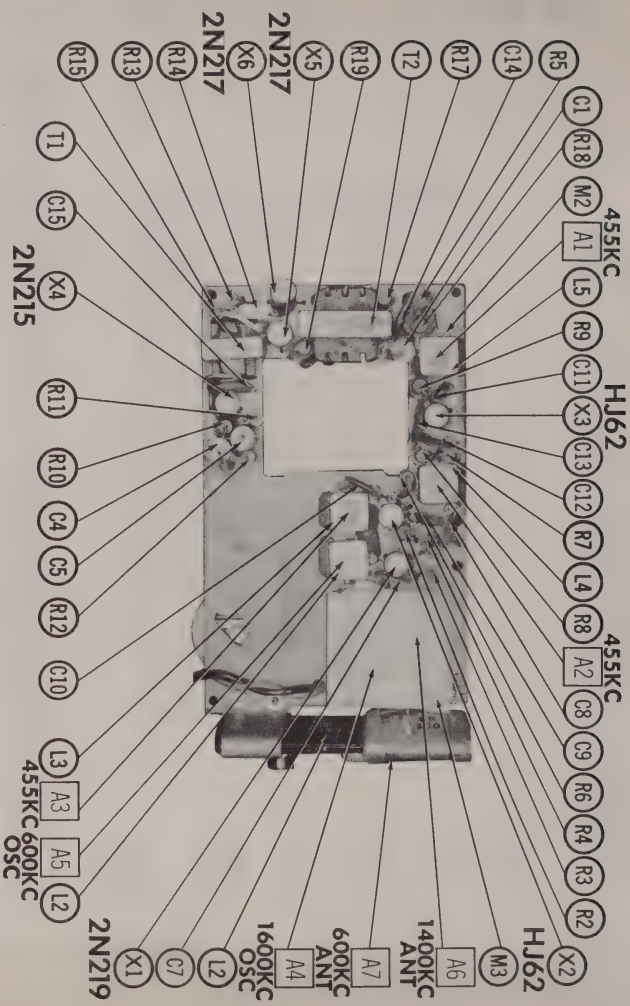
MISCELLANEOUS

ITEM No.	PART NAME	ALPHA PART No.	NOTES
M3	Tuning Cap.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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**BOGEN MODEL
RP-40**

BOGEN MODEL
RP-40

BOGEN MODEL
RP-40

TRADE NAME	Bogen Model RP-40
MANUFACTURER	Bogen-Presto Co., A Div. of The Siegler Corp., P.O. Box 500, Paramus, N. J.
TYPE SET	AC Operated 23 Tube FM-AM Receiver with Stereo Amplifier
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 150 Watts, 1.55 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 – 1600KC FREQ. MOD. 88 – 108MC

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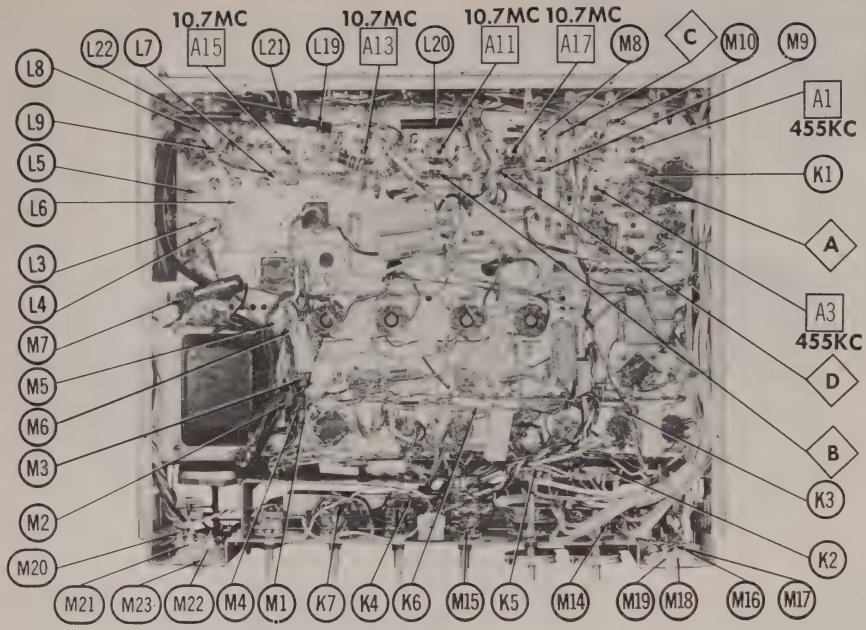
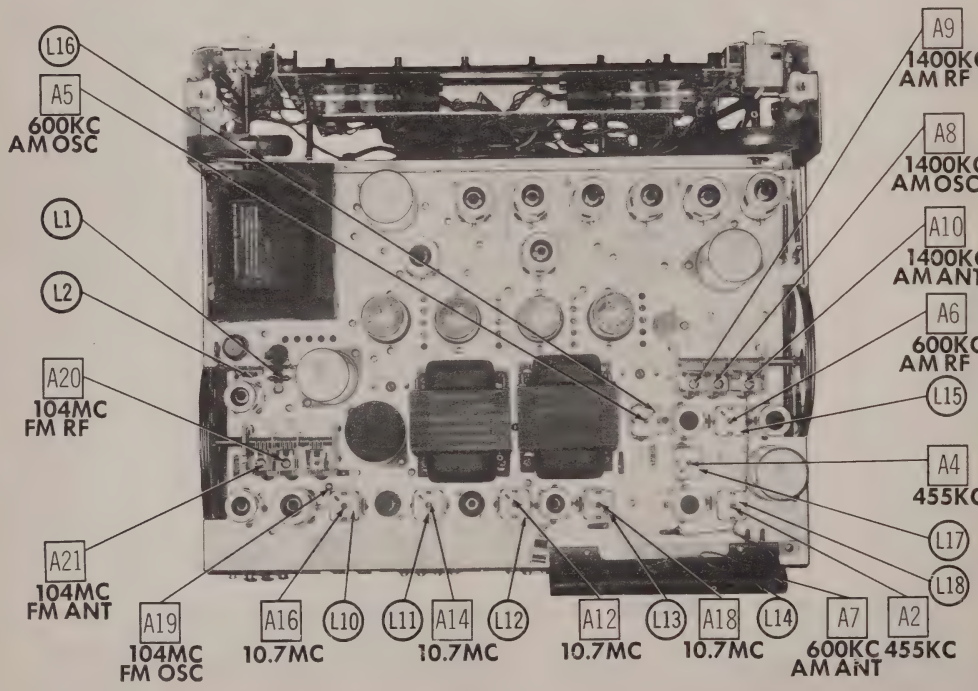
KK988

DATE 3–62 SET 570 FOLDER 5

SET 570 FOLDER 5



CHASSIS BOTTOM VIEW-ALIGN., INDUCTOR & MISC. IDENT.



CHASSIS TOP VIEW-ALIGNMENT & INDUCTOR IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication. Set volume control at maximum position.
Suggested Alignment Tools:

A1 thru A6, A11 thru A18....	GENERAL CEMENT #5097, 8727 WALSCO #2515
A8, A9, A10, A20, A21.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A19.....	GENERAL CEMENT #5003, 8271, 8275, 8276, 8609, 8721, 8722, 9150, 9298 WALSCO #2516, 2518, 2519

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400% 30% AM)	(AM) Tuning gang fully open.	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	High side to AM antenna terminal. Low side to chassis.	600KC	600KC	"	A5, A6, A7	Adjust for maximum deflection. A7 is adjusted by sliding coil turns on loopstick.
3.	"	1400KC	1400KC	"	A8, A9, A10	Adjust for maximum deflection. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓑ. Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A17	"
6.	"	"	"	DC probe to point Ⓓ. Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. amp. to point Ⓑ. Low side to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A17	Disconnect stabilizing capacitor C10. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C10.
6.	"	"	"	Vert. amp. to point Ⓓ. Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

"AFC Off".

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	104MC	(FM) 104MC	DC probe to point Ⓑ. Common to chassis.	A19, A20, A21	Adjust for maximum deflection.
8.	"	90MC	90MC	"	L7, L6, L5	Adjust for maximum deflection by expanding or compressing coil turns.

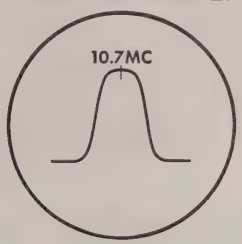


FIG. 1

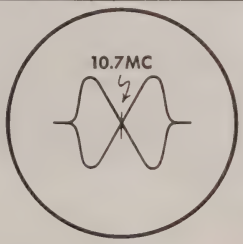
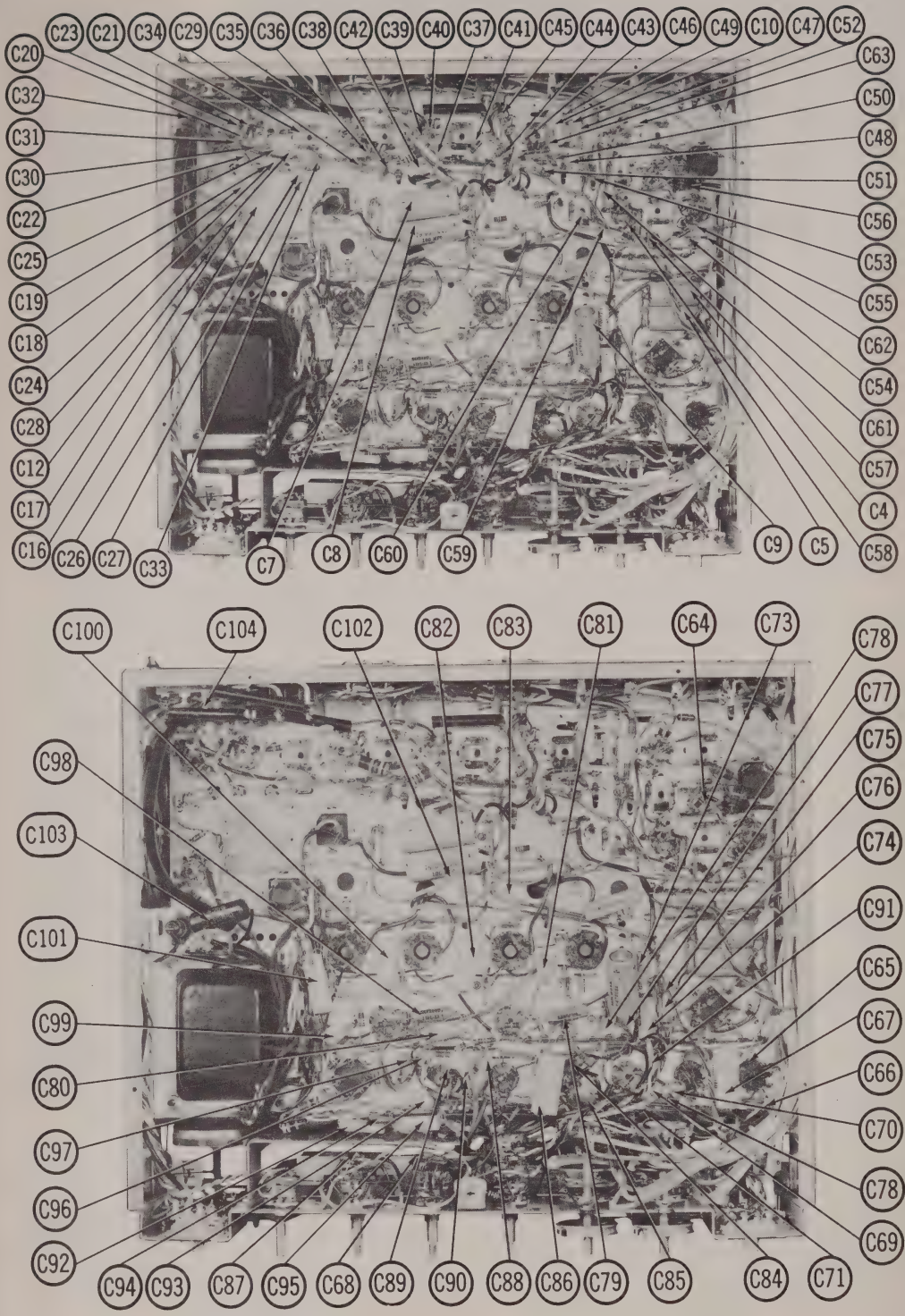
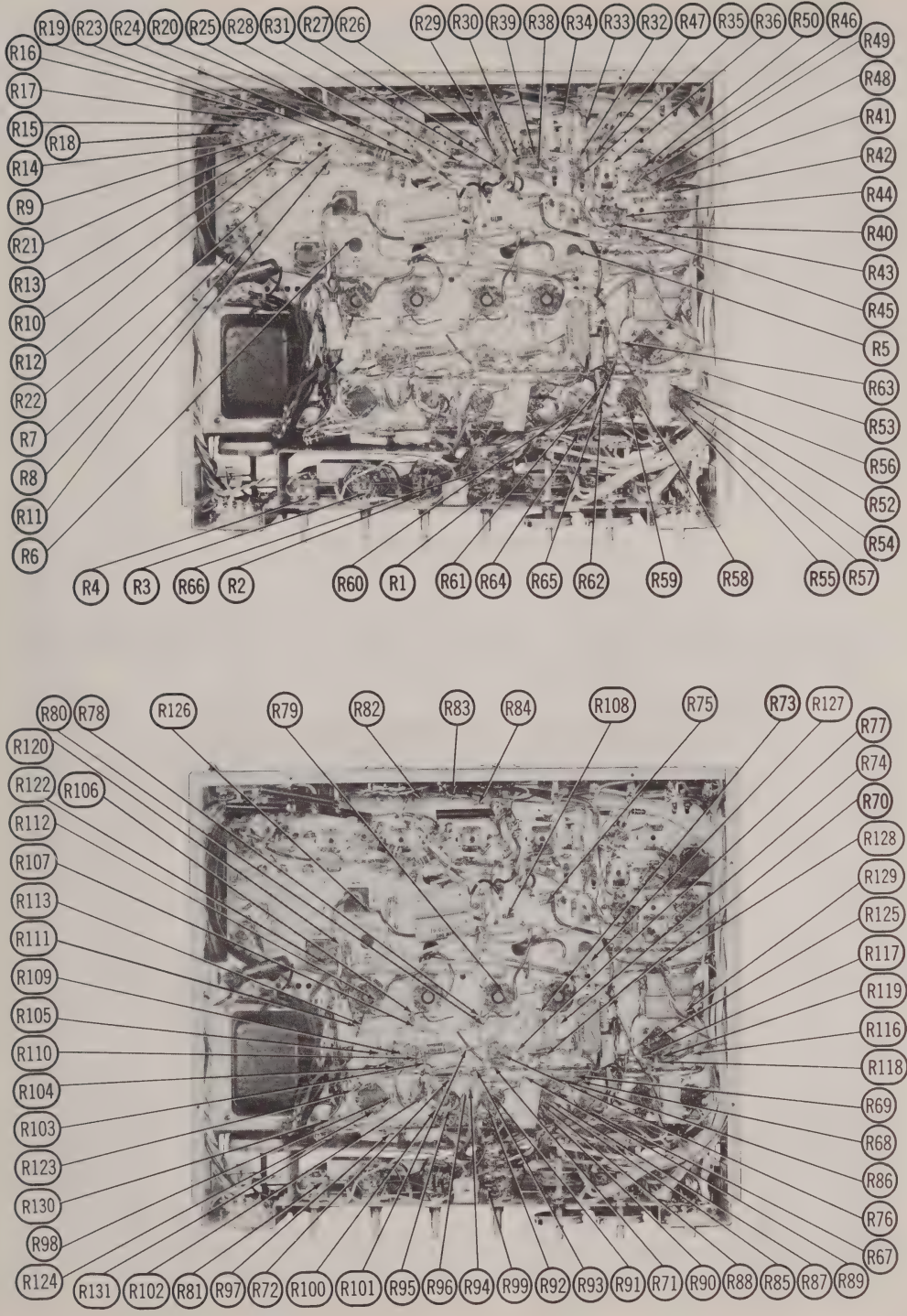


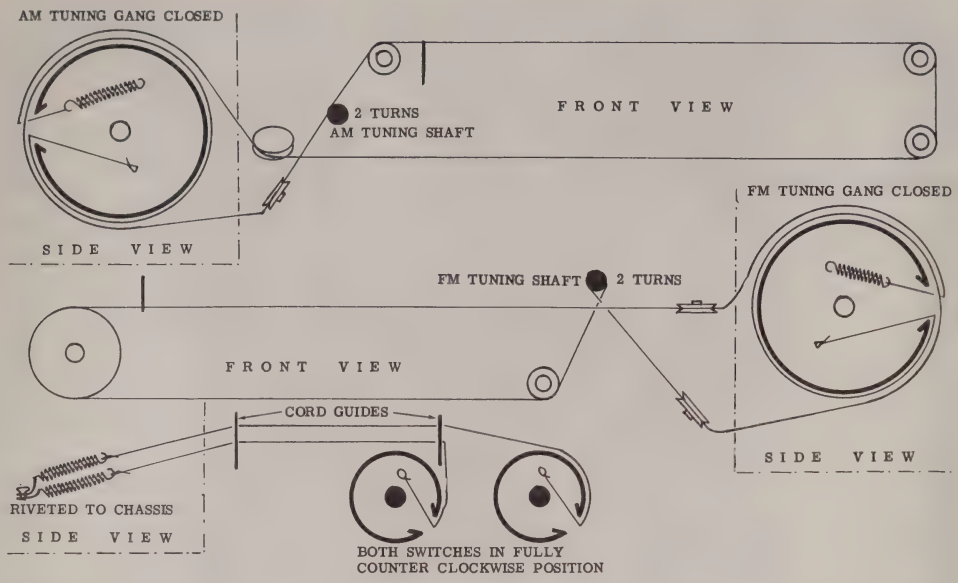
FIG. 2



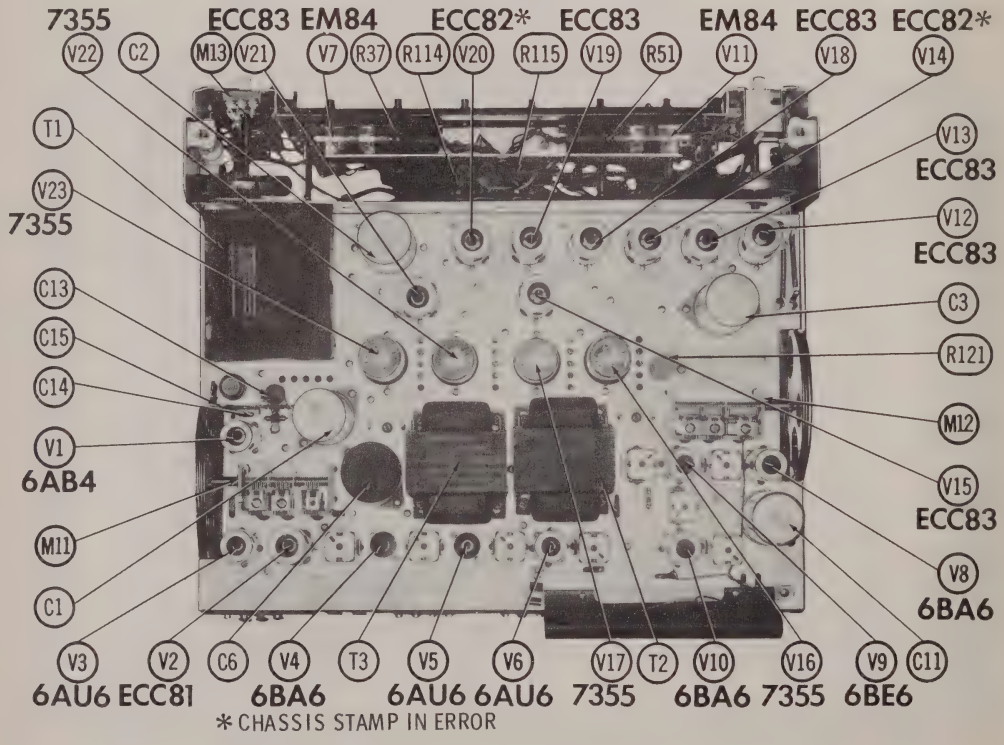
CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



CHASSIS BOTTOM VIEW-RESISTOR IDENT.

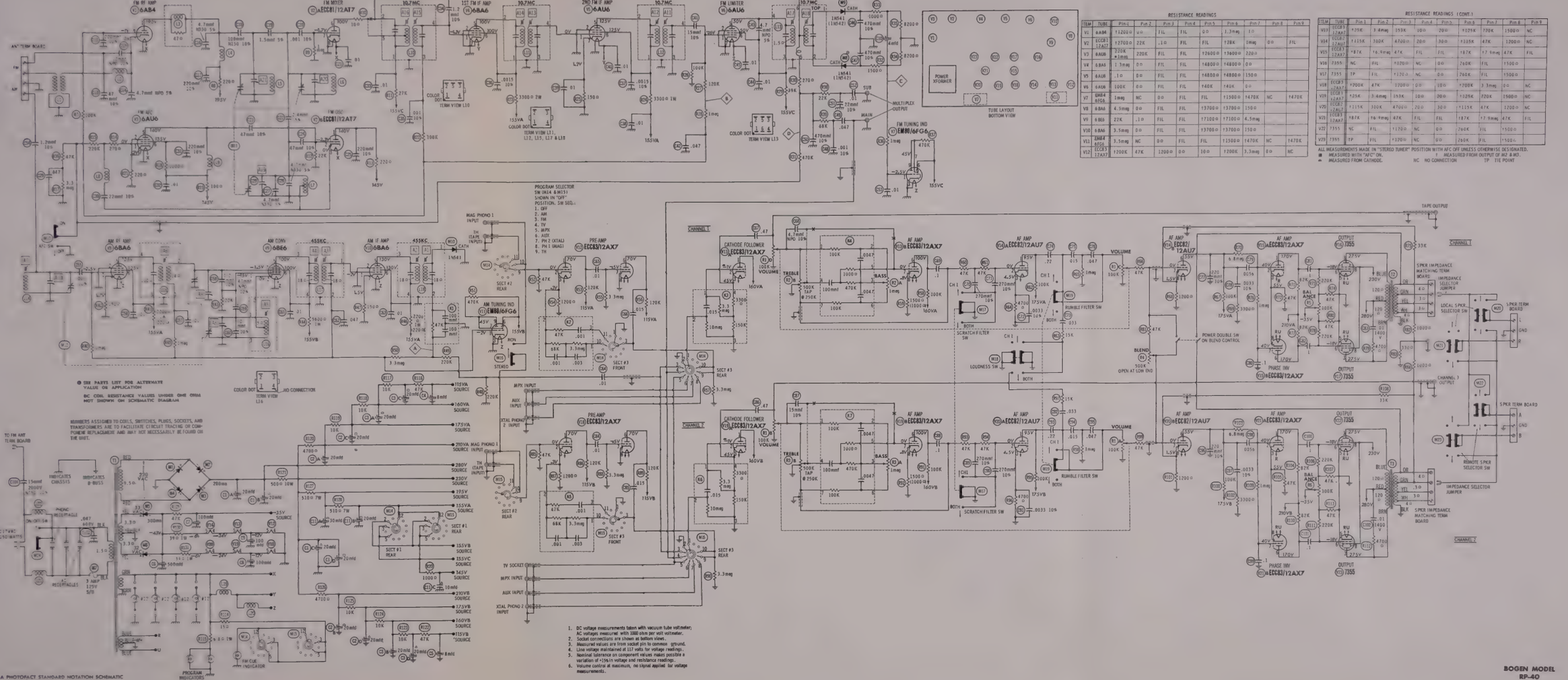


DIAL CORD STRINGING



* CHASSIS STAMP IN ERROR

CHASSIS-TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AB4	12200Ω	0Ω	FIL	FIL	0Ω	1.3meg	1Ω		
V2	ECC81 12AT7	12700Ω	22K	.1Ω	FIL	FIL	128K	1meg	0Ω	FIL
V3	6AU6	220K	220K	FIL	FIL	12600Ω	13600Ω	220Ω		
V4	6BA6	1.3meg	0Ω	FIL	FIL	148000Ω	148000Ω	0Ω		
V5	6AU6	.1Ω	0Ω	FIL	FIL	148000Ω	148000Ω	150Ω		
V6	6AU6	100K	0Ω	FIL	FIL	140K	140K	0Ω		
V7	EM84 6FG6	1meg	NC	0Ω	FIL	FIL	11500Ω	14700Ω	NC	14700Ω
V8	6BA6	4.5meg	0Ω	FIL	FIL	137000Ω	137000Ω	150Ω		
V9	6BE6	22K	.1Ω	FIL	FIL	171000Ω	171000Ω	4.5meg		
V10	6BA6	3.5meg	0Ω	FIL	FIL	137000Ω	137000Ω	150Ω		
V11	EM84 6FG6	3.5meg	NC	0Ω	FIL	FIL	11500Ω	14700Ω	NC	14700Ω
V12	ECC83 12AX7	1200K	47K	1200Ω	0Ω	100	1200K	3.3meg	0Ω	NC

RESISTANCE READINGS (CONT.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V13	ECC83 12AX7	125K	3.4meg	153K	100	200	1325K	220K	1500Ω	NC
V14	ECC82 12AU7	1115K	300K	47000Ω	200	300	1325K	47K	1200Ω	NC
V15	ECC83 12AX7	187K	16.9meg	47K	FIL	FIL	187K	17.9meg	47K	FIL
V16	7355	NC	FIL	11200Ω	NC	0Ω	260K	FIL	1500Ω	
V17	7355	TP	FIL	11200Ω	NC	0Ω	260K	FIL	1500Ω	
V18	ECC83 12AX7	1200K	47K	12000Ω	0Ω	100	1200K	3.3meg	0Ω	NC
V19	ECC82 12AU7	125K	3.4meg	153K	100	200	1325K	220K	1500Ω	NC
V20	ECC82 12AU7	1115K	300K	47000Ω	200	300	1115K	47K	1200Ω	NC
V21	ECC83 12AX7	187K	16.9meg	47K	FIL	FIL	187K	17.9meg	47K	FIL
V22	7355	NC	FIL	11200Ω	NC	0Ω	260K	FIL	1500Ω	
V23	7355	TP	FIL	11200Ω	NC	0Ω	260K	FIL	1500Ω	

ALL MEASUREMENTS MADE IN "STEREO TUNER" POSITION WITH AFC OFF UNLESS OTHERWISE DESIGNATED.
■ MEASURED WITH "AFC" ON. † MEASURED FROM OUTPUT OF M2 & M3.
▬ MEASURED FROM CATHODE. NC NO CONNECTION TP TIE POINT

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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BOGEN MODEL RP-40

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6AB4
V2	FM Mixer-FM Osc.	ECC81/12AT7
V3	FM AFC	6AU6
V4	1st FM IF Amplifier	6BA6
V5	2nd FM IF Amplifier	6AU6
V6	FM Limiter	6AU6
V7	FM Tuning Indicator	EM84/6FG6
V8	AM RF Amplifier	6BA6
V9	AM Converter	6BE6
V10	AM IF Amplifier	6BA6
V11	AM Tuning Indicator	EM84/6FG6
V12	Channel 1 Preamp.	ECC83/12AX7
V13	Channel 1 Cathode Follower-AF Amp.	ECC83/12AX7
V14	Channel 1 AF Amp.	ECC82/12AU7
V15	Channel 1 AF Amp.-Phase Inverter	ECC83/12AX7
V16	Channel 1 Output	7355
V17	Channel 1 Output	7355
V18	Channel 2 Preamp.	ECC83/12AX7
V19	Channel 2 Cath. Follower-AF Amp.	ECC83/12AX7
V20	Channel 2 AF Amp.	ECC82/12AU7
V21	Channel 2 AF Amp.-Phase Inverter	ECC83/12AX7
V22	Channel 2 Output	7355
V23	Channel 2 Output	7355

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA: BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	20	350	79-010-018	AFH4-14	D0130	XC4-49	FP444	TMQ-4616	TVL-4763
B	▲20	350							
C	▲20	350							
D	■20	350							
C2A	20	350	79-010-018	AFH4-14	D0130	XC4-49	FP444	TMQ-4616	TVL-4763
B	▲20	350							
C	■20	350							
D	▲20	350							
C3A	▲20	350	79-010-018	AFH4-14	D0130	XC4-49	FP444	TMQ-4616	TVL-4763
B	20	350							
C	■20	350							
D	▲20	350							
C4	8	250	79-001-096	PRS1555	BBR8-250	QT1-4	TC51	TD-8-250	TVA-1503
C5	8	250	79-001-096	PRS1555	BBR8-250	QT1-4	TC51	TD-8-250	TVA-1503
C6	500	50	79-010-034	AFH1-13	A0160	XC1-25	WP065	TMS-1160	TVL-1330
C7	100	50	79-001-058	PRS1360	BR1005	QT1-23	TC3501	TD-100-50	TVA-1310
C8	100	25	79-001-049	PRS1270	BBR100-25	QT1-23	TC2501	TD-100-25	TVA-1207
C9	100	25	79-001-049	PRS1270	BBR100-25	QT1-23	TC2501	TD-100-25	TVA-1207
C10	4	25	80-2004-01	PTT77	NLW4-50	MT1-3	TT50X4	MLV5-25	TE-1201.2
C11A	▲30	350	79-010-003	† AFH3-28-30	C0270	XC3-26	FP343.6	TMT-3429	TVL-3724.4
B	■20	350							
C	▲10	350							

† Use BW-4 Hardware.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C12	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C13	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C14	4.7 NPO 5%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C15	12 NPO 10%			TCZ-12	C10Q12C	CCTO-120	CNO-412	10TCC-Q12
C16	4.7 N330 5%					*		
C17	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C18	100 N150 10%					*		10TCP-T10
C19	1.5 5%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C20	.001 10%		DI-001	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C21	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	2.4 5%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C23	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C24	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C25	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C26	4.7 N330 5%					*		
C27	4.7 N330 5%					*		
C28		#80-2004-01						
C29	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C30	22 10%		DI-22	DD-220	L10Q22	CCD-220	GP422	10TS-Q22
C31	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C32	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	1.2 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V12
C35	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C36	.0015 10%		DI-1500	DD-152	5R5D15	CCD-152	GP215	10TS-D15
C37	.0015 10%		DI-1500	DD-152	5R5D15	CCD-152	GP215	10TS-D15
C38	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C41	15 10%		DI-15	DD-150	L10Q15	CCD-150	GP415	10TS-Q10
C42	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C43	4.7 NPO 5%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C44	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C46	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C47	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C48	.001 10%		DI-001	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C49	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C50	470 10%		DI-471	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C51	22 10%		DI-22	DD-220	L10Q22	CCD-220	GP422	10TS-Q22
C52	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C53	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C54	1.2 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V12
C55	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C56	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C57	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C58	1.2 10%		NPO-SI 1.2	TCZ-1			CNO-510	10TCC-V12
C59	47 NPO 10%		DI-47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C60	10 10%		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C61	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C62	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C63	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C64	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C65	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C66	.015		BPD-015	DD-153	BYA10S15	CCD-153	B-115	5HK-S15
C67	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C68	4.7 NPO 10%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C69	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C70	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C71	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C72	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C73	.033 200V		P288N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C74	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C75	.015		BPD-015	DD-153	BYA10S15	CCD-153	B-115	5HK-S15
C76	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C77	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C78	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C79	.0056 200V			D6-562	DPMS6D56	6DP-1-562	GEM-16256	6PS-D56
C80	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C81	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C82	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C83	.01 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C84	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C85	.015		BPD-015	DD-153	BYA10Si5	CCD-153	B-115	5HK-S15
C86	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C87	15 10%		DI-47	DD-150	L10Q15	CCD-150	GP415	10TS-Q15
C88	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C89	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C90	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C91	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C92	.033 200V		P288N-033	DD-302	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C93	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C94	.015		BPD-015	DD-153	BYA10Si5	CCD-153	B-115	5HK-S15
C95	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C96	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C97	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C98	.0056 200V			D6-562	DPM56D56	6DP-1-562	GEM-16256	6PS-D56
C99	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C100	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C101	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C102	.01 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C103	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C104	15 N750 2000V 10%							

Bogen Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			BOGEN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Volume, Channel 2	100K	77-001-498				
B	Volume, Channel 2	100K					
C	Volume, Channel 1	100K					
D	Volume, Channel 1	100K					
R2A	Bass, Channel 1	1meg	77-001-496	F1-51, R4-42	(P-1meg-S, FP-015, RF1-500K, FR-104) *	(BU5, CF17, SF5, CR35T, SR3, DC1) †	■ UE4237
B	Treble, Channel 1	500K (250K Tap)					
R3A	Bass, Channel 2	1meg	77-001-496	F1-51, R4-42	(P-1meg-S, FP-015, RF1-500K, FR-104) *	(BU5, CF17, SF5, CR35T, SR3, DC1) †	■ UE4237
B	Treble, Channel 2	500K (250K Tap)					
R4	Blend & Switch (Power Doubler)	500K ①	77-001-497				
R5	Balance, Channel 1	100K	77-001-392	TT-40	B47-100K-S	B11-128, TM4	PTA15L, or TA15L
R6	Balance, Channel 2	100K	77-001-392	TT-40	B47-100K-S	B11-128, TM4	PTA15L, or TA15L

* "UNI-TITE"
† "SNAPTROL"
■ "STA-LOC" Equivalent: FA16L, RU55T254, OF937, IS1187.
① Open at Low End. (Used as Switch).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	100K				R14	270Ω			
R8	220Ω				R15	220K			
R9	1meg				R16	47K			
R10	10Ω				R17	3.3meg			
R11	27K				R18	1000Ω			
R12	22K				R19	100Ω			
R13	220Ω				R20	1000Ω			

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R21	220Ω				R77	82K			
R22	100K				R78	220K			
R23	3300Ω 2W				R79	4700Ω			
R24	3300Ω 1W				R80	47K			
R25	150Ω				R81	47K			
R26	100K				R82	1000Ω			
R27	120K				R83	330Ω			
R28	1meg				R84	1000Ω			
R29	39K				R85	47K			
R30	270Ω				R86	120K			
R31	470K				R87	1200Ω			
R32	1500Ω				R88	3.3meg			
R33	1000Ω				R89	120K			
R34	8200Ω				R90	3.3meg			
R35	8200Ω				R91	100K			
R36	1meg				R92	1500Ω			(1000Ω)*
R37	470K				R93	47K			
R38	22K				R94	47K			
R39	68K				R95	100K			
R40	1meg				R96	4700Ω			
R41	2200Ω 1W			(220Ω)*	R97	15K			
R42	150Ω				R98	1meg			
R43	22K				R99	47K			
R44	5600Ω 1W				R100	100K			
R45	1meg				R101	1200Ω			
R46	2200Ω 1W			(220Ω)*	R102	3300Ω			
R47	150Ω				R103	6.8meg			
R48	220K				R104	82K			
R49	220K				R105	47K			
R50	3.3meg				R106	220K			
R51	470K				R107	47K			
R52	47K				R108	33K			
R53	120K				R109	1meg			
R54	1200Ω				R110	82K			
R55	3.3meg				R111	220K			
R56	120K				R112	4700Ω			
R57	3.3meg				R113	47K			
R58	100K				R114	15Ω			
R59	1500Ω			(1000Ω) *	R115	6.8Ω 1W			
R60	47K				R116	47K			
R61	47K				R117	10K			
R62	100K				R118	10K			
R63	15K				R119	10K			
R64	4700Ω				R120	4700Ω			
R65	1meg				R121	500Ω 10W	PW10-500	10W-SQ-500	
R66	47K				R122	47K			
R67	100K				R123	10K			
R68	1200Ω				R124	10K			
R69	3300Ω				R125	10K			
R70	6.8meg				R126	4700Ω			
R71	82K				R127	510Ω 7W	PW7-510	7W-SQ-510	
R72	47K				R128	510Ω 7W	PW7-510	7W-SQ-510	
R73	220K				R129	47K			
R74	47K				R130	39Ω 1W			
R75	33K				R131	39Ω 1W			
R76	1meg								

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BOGEN PART No.	REPLACEMENT DATA
K1	AM Diode Filter	100mmf, 100mmf, 47K	78-907-001	Aerovox PA-98 Centralab PC-50 Sprague D-1
K2	#1 Preamp. Cathode	.001mfd, .001mfd, .003mfd, 47K, 68K, 3.3meg	78-924-001	

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS (cont)

ITEM No.	USE	DESCRIPTION	BOGEN PART No.	REPLACEMENT DATA
K3	#1 Preamp. Grid & Cathode	.015mfd, 3300Ω, 150K, 3.3meg, 10meg.	78-925-001	
K4	#1 Tone Comp.	100mmf, .0047mfd, .0047mfd, 1000Ω, 100K, 470K	78-900-001	Aerovox PA-659 Centralab PC-190 Sprague TC-1
K5	#2 Preamp. Cathode	.001mfd, .001mfd, .003mfd, 47K, 68K, 3.3meg	78-924-001	
K6	#2 Preamp. Grid & Cathode	.015mfd, 3300Ω, 150K, 3.3meg, 10meg	78-925-001	
K7	#2 Tone Comp.	100mmf, .0047mfd, .0047mfd, 1000Ω, 100K, 470K	78-900-001	Aerovox PA-659 Centralab PC-190 Sprague TC-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: BOGEN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	FM Ant.	95-5017-01					① Wound on 47Ω
L2	RF Choke (1uh)	95-5016-01	BC-561	4602	RTC-8515	T855	② IRC Part #CLA
L3	RF Choke	95-5001-01 ①					
L4	RF Choke (1.7uh)	95-5015-01	BC-562	4604	RTC-8516	T856	
L5	FM RF	95-0006-01					
L6	FM Mixer	95-0006-02					
L7	FM Osc.	95-0006-03					
L8	RF Choke (1uh)	95-5018-01	BC-561	4602	RTC-8515	T855	
L9	RF Choke (3.3uh)	95-5019-02 ②	BC-564	9330-12	RTC-8518	T816	
L10	1st FM IF	95-5011-01	FM-254	1463	RTC-8599	T633	
L11	2nd FM IF	95-5010-01	FM-254	1463	RTC-8599	T633	
L12	3rd FM IF	95-5010-01	FM-254	1463	RTC-8599	T633	
L13	Ratio Detector	95-5012-01	FM-255	1465	RTC-8600	T635	
L14	Loopstick	95-5022-01	BC-419	705-A		T532	
L15	AM RF	95-5032-01					
L16	AM Osc.	95-5009-01	BC-392	A-123-C	RTC-8767	T508	
L17	1st AM IF	95-5013-01	BC-352	12-C1	RTC-8632	T607	
L18	2nd AM IF	95-5013-01	BC-353	12-C2	RTC-8633	T608	
L19	Fil. Choke (1.5uh)	95-5005-02	BC-562	4604	RTC-8516	T856	
L20	Fil. Choke (1.5uh)	95-5005-02	BC-562	4604	RTC-8516	T856	
L21	Line Choke(1.7uh)	95-5015-01	BC-562	4604	RTC-8516	T856	
L22	Line Choke(1.7uh)	95-5015-01	BC-562	4604	RTC-8516	T856	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: BOGEN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ⓐ 1.55A	220V ⓐ .540A AC	65VCT ⓐ .300A DC	83-640-000					
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT ⓐ 4.1A	6.3V ⓐ 4.5A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: BOGEN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4000Ω CT	16Ω Tap ⓐ 8Ω, 4Ω, 2Ω	83-319-000					
T3	4000Ω CT	16Ω Tap ⓐ 8Ω, 4Ω, 2Ω	83-319-000					

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: BOGEN PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.280A	96-5023-01	1N1763	F6	* 2 Required
M2	.280A	96-5023-01	1N1763	F6	
M3	.280A	96-5023-01	1N1763	F6	
M4	.280A	96-5023-01	1N1763	F6	
M5	.300A	96-5022-01	1N1763	F2*	
M6	.300A	96-5022-01	1N1763	F2*	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: BOGEN PART No. FUSE	BOGEN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M7	3AG	3A 125V S/B			313003 (3AG 3A 125V) S/B	342001	MDX 3	HKP

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: BOGEN PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M8	1N541*			1N295	Ratio Detector
M9	1N541*			1N295	(Matched Pair)
M10	1N541	96-5007-02		1N60	AM Detector

* Some versions may use 1N542 in this application (Part #96-5007-01).

MISCELLANEOUS

ITEM No.	PART NAME	BOGEN PART No.	NOTES
M11	Tuning Cap	80-0125-01	FM, 3 Gang
M12	Tuning Cap	80-0124-01	AM, 3 Gang (Ant. 36—579mmf, RF 10—503mmf, Osc. 21—172mmf)
M13	Switch	81-003-002	AFC (DPDT Slide Type)
M14	Switch	81-001-524	Program Selector, Channel 1 (Rotary Type)
M15	Switch	81-001-524	Program Selector, Channel 2 (Rotary Type)
M16	Switch	81-003-002	Phono Input (DPDT Slide Type)
M17	Switch	81-003-001	Scratch Filter (DPTT Slide Type)
M18	Switch	81-003-001	Loudness (DPTT Slide Type)
M19	Switch	81-003-001	Rumble (DPTT Slide Type)
M20	Switch	81-003-001	Local Speaker Selector, Left (DPTT Slide Type)
M21	Switch	81-003-001	Local Speaker Selector, Right (DPTT Slide Type)
M22	Switch	81-003-001	Remote Speaker Selector, A (DPTT Slide Type)
M23	Switch	81-003-001	Remote Speaker Selector, B (DPTT Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Scale	12-4021-01	
Dial Pointer	45-9325-01	FM
Dial Pointer	70-9096-01	AM
Cueing Tabs	12-4018-01	Plastic (Station Indicators)
Knob	03-0559-01	Tuning
Knob	03-0560-01	Function Selector, and Blend
Knob	03-0558-01	Volume, Bass, Treble, Front
Knob	03-0557-01	Volume, Bass, Treble, Rear

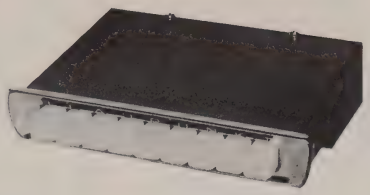
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

BLAUPUNKT MODEL KV810



TRADE NAME	Blaupunkt Model KV810		
IMPORTER	Robert Bosch Corp., 40-25 Crescent Street, Long Island City 1, N. Y.		
TYPE SET	Externally Powered One Tube 8-Band SW Mobile Converter		
TUNING RANGES	16 Meters	31 Meters	60 Meters
	19 Meters	41 Meters	90 Meters
	25 Meters	49 Meters	

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Connect converter to receiver for alignment and tune receiver to 1000KC.
When adjusting antenna coils, connect a 200Ω resistor across secondary while aligning primary, and then move resistor to primary while aligning secondary.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Set antenna trimmer A1 to mid range.
Suggested Alignment Tools:
A1..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A2 thru A25.....GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	DEPRESS PUSHBUTTON	OUTPUT METER	ADJUST	REMARKS
1.	Thru dummy (Fig. 1) to Converter antenna receptacle.	3.6MC (400% Mod.)	90	Across voice coil.	A2, A3, A4	Adjust for maximum output.
2.	"	4.8MC	60	"	A5, A6, A7	"
3.	"	6.0MC	49	"	A8, A9, A10	"
4.	"	7.5MC	41	"	A11, A12, A13	"
5.	"	9.5MC	31	"	A14, A15, A16	"
6.	"	11.7MC	25	"	A17, A18, A19	"
7.	"	15.2MC	19	"	A20, A21, A22	"
8.	"	18MC	16	"	A23, A24, A25	"
9.	With the radio and converter installed in car and antenna fully extended tune in a weak station on 49 meters near 6MC and adjust A1 for maximum output.					

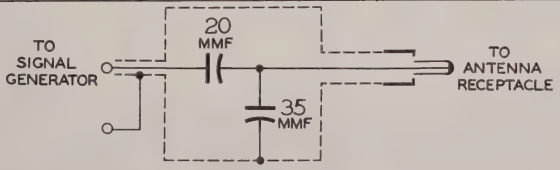


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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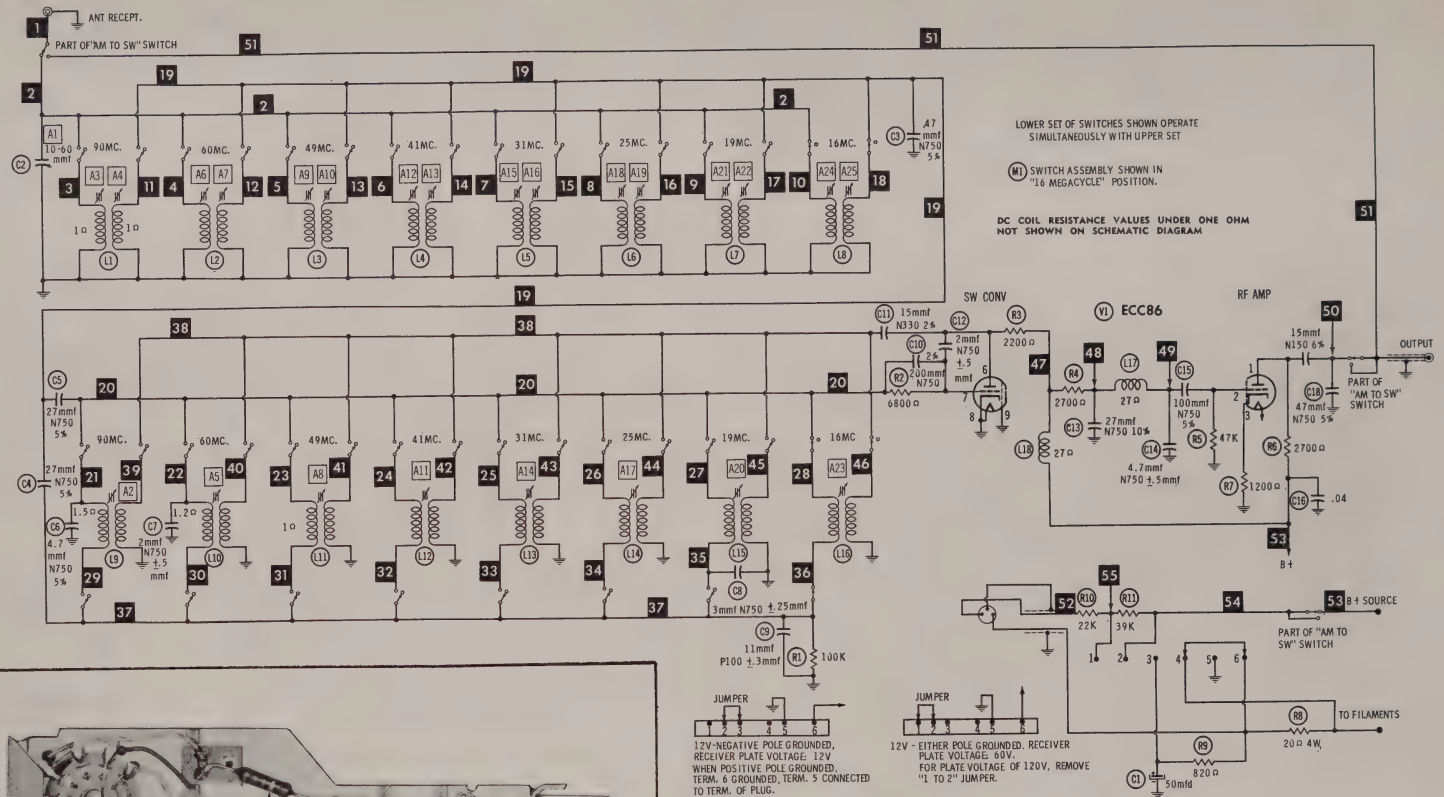
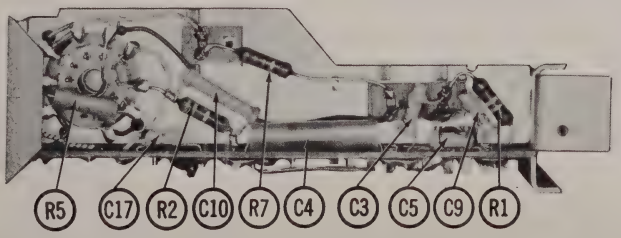
KZ967

BLAUPUNKT MODEL KV810
BLAUPUNKT MODEL KV810
SET 570 FOLDER 6


ANT RECEPT.
PART OF "AM TO SW" SWITCH
90MC.
60MC.
49MC.
41MC.
31MC.
25MC.
19MC.
16MC.
LOWER SET OF SWITCHES SHOWN OPERATE SIMULTANEOUSLY WITH UPPER SET
M1 SWITCH ASSEMBLY SHOWN IN "16 MEGACYCLE" POSITION.
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
SW CONV
V1 ECC86
RF AMP
OUTPUT
PART OF "AM TO SW" SWITCH
B+
B+ SOURCE
PART OF "AM TO SW" SWITCH
TO FILAMENTS
JUMPER
12V-NEGATIVE POLE GROUNDED, RECEIVER PLATE VOLTAGE: 12V WHEN POSITIVE POLE GROUNDED, TERM. 6 GROUNDED, TERM. 5 CONNECTED TO TERM. OF PLUG.
JUMPER
12V - EITHER POLE GROUNDED. RECEIVER PLATE VOLTAGE: 60V. FOR PLATE VOLTAGE OF 120V, REMOVE "1 TO 2" JUMPER.



CONVERTER CIRCUIT

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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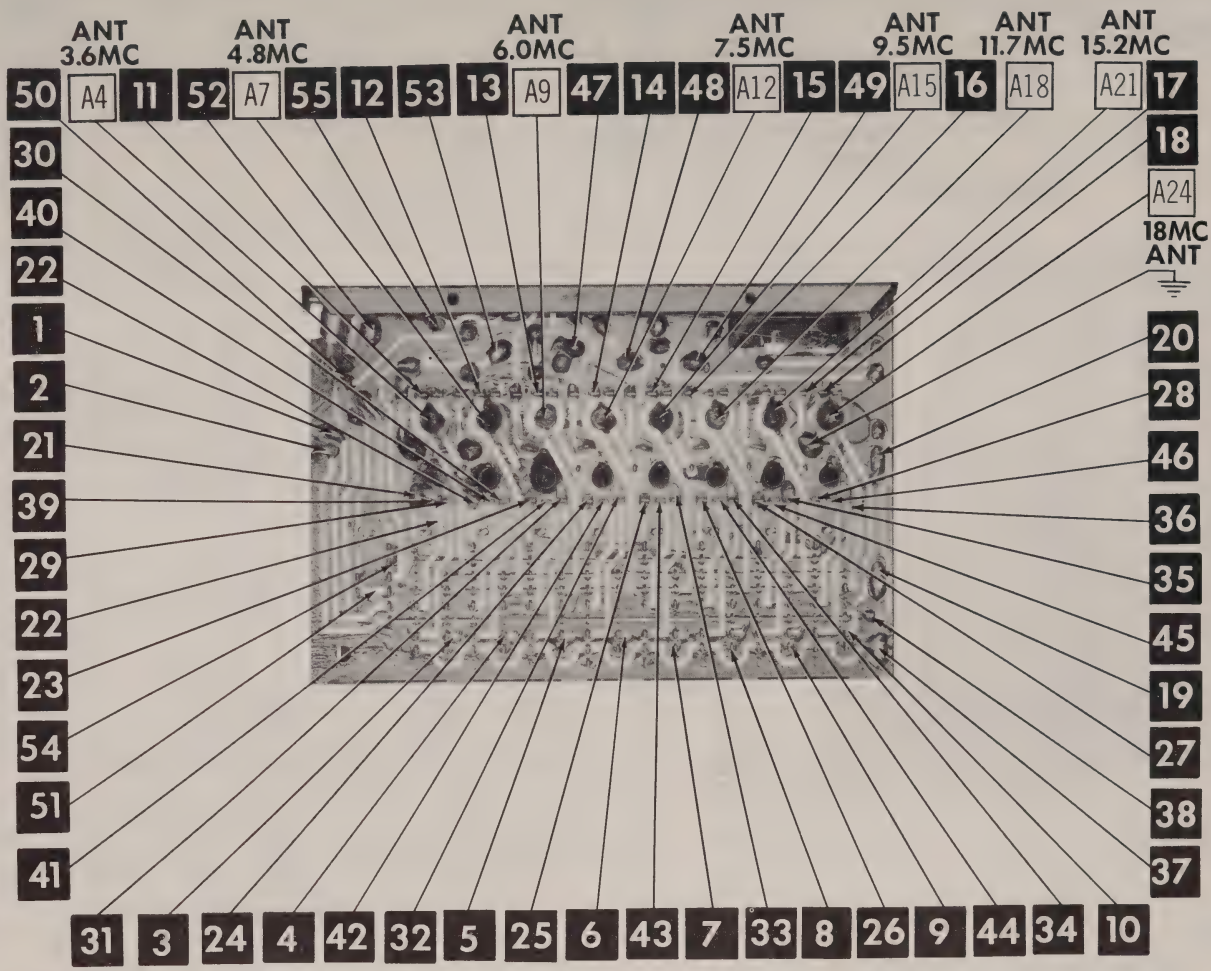
BLAUPUNKT MODEL KV810



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PRINTED BOARD

BLAUPUNKT MODEL KV810

FOLDER 6

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	GENERAL ELECTRIC / RAYTHEON / SYLVANIA TYPE	ITEM No.	USE	TYPE
V1	SW Conv. -RF Amp.	ECC86			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BLAUPUNKT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	50	15	K0749/9n	PTT72	NLW50-15	MT1-16	TT15X50	MLV50-15	TE-1160

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10-60	#TK 6/15X				404		
C3	47 N750 5%			TCN-47	C10Q47U		CN7-447	10TCU-Q47
C4	27 N750 5%			TCN-27	C10Q27U		CN7-427	10TCU-Q27
C5	27 N750 5%			TCN-27	C10Q27U		CN7-427	10TCU-Q27
C6	4.7 N750 5%			DTN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50
C7	2 N750 +.5mmf						CN7-522	10TCU-V22
C8	3 N750 +.5mmf							
C9	11 P100 +.3mmf	#KO 2203/2n				*		
C10	200 N750 2%	#KO 2208/32n						
C11	15 N330 2%	#KO 2211/84n				*		
C12	2 N750 +.5mmf						CN7-522	10TCU-V22
C13	27 N750 10%		N750-SI 27	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C14	4.7 N750 +.5mmf			DTN-5	C10V5U	CCTN-050	CN7-547	10TCU-V47
C15	100 N750 5%			TCN-100	C10T1U		CN7-310	10TCU-T10
C16	.04 150V		P288N-04	DD-403	DPMS6S4	4DP-3-403	GEM-414	4TM-S40
C17	15 N150 5%	#KO 2205/5n				*		10TCP-Q15
C18	47 N750 5%			TCN-47	C10Q47U		CN7-447	10TCU-Q47

Blaupunkt Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

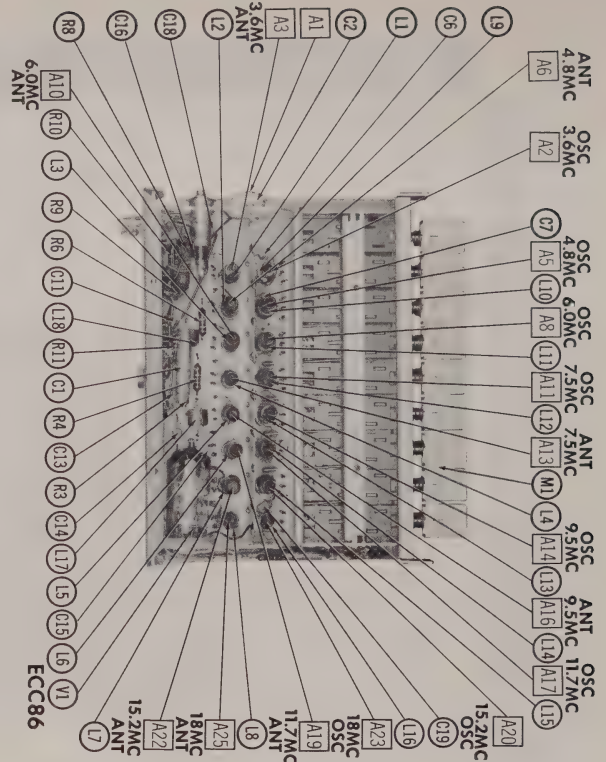
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R1	100K			
R2	6800Ω			
R3	2200Ω			
R4	2700Ω			
R5	47K			
R6	2700Ω			
R7	1200Ω			
R8	20Ω 4W	PW4-20	5W-SQ-20	WI 2131/14n
R9	820Ω			
R10	22K			
R11	39K			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA BLAUPUNKT PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	90M Ant.	WC 2495/1z					
L2	60M Ant.	WC 2495/2z					
L3	49M Ant.	WC 2495/3z					
L4	41M Ant.	WC 2495/4z					
L5	31M Ant.	WC 2495/5z					
L6	25M Ant.	WC 2495/6z					
L7	19M Ant.	WC 2495/7z					
L8	16M Ant.	WC 2495/8z					
L9	90M Osc.	WC 2495/9z					
L10	60M Osc.	WC 2495/10z					
L11	49M Osc.	WC 2495/11z					
L12	41M Osc.	WC 2495/12z					
L13	31M Osc.	WC 2495/15z					
L14	25M Osc.	WC 2346/57z					
L15	19M Osc.	WC 2495/13z					
L16	16M Osc.	WC 2495/14z					
L17	RF Choke	WC 2401/6z					
L18	RF Choke	WC 2401/6z					

CHASSIS—TOP VIEW



MISCELLANEOUS

ITEM No.	PART NAME	BLAUPUNKT PART No.	NOTES
M1	Switch Ass'y. Printed Board	PT 4019/2z	Pushbutton Type Includes Coils

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

PHOTOFACT® Folder with CIRCUITRACE®

CHANNEL MASTER MODEL 6512-2

CHANNEL MASTER
MODEL 6512-2

TRADE NAME	Channel Master Model 6512-2		
SUPPLIER	Channel Master Corp., Ellenville, N. Y.		
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver		
POWER SUPPLY	6 Volts DC	RATING	10MA @ 6 Volts DC (No Signal, Min. Volume) 25MA @ 6 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	530-1650KC	SHORT WAVE	3.8-12.5MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4, A6..... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537

A5, A7, A9, A11..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

A10..... GENERAL CEMENT #8721, 8722
WALSCO #2519

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to Base of Mixer. Low side to chassis.	455KC (400% Mod.)	(BC) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1650KC	"	"	A5	"
3.	"	530KC	Tuning gang fully closed.	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	"
5.	"	600KC	600KC Signal.	"	A8	Adjust for maximum output by moving antenna coil turns along ferrite core.
6.	"	12.5MC	(SW) 12.5MC	"	A9	Adjust for maximum output.
7.	"	3.8MC	3.8MC	"	A10	"
8.	"	12MC	12MC Signal.	"	A11	"
9.	"	4.2MC	4.2MC Signal.	"	A12	Adjust for maximum output by moving antenna coil turns along ferrite core. Repeat steps 2 thru 9.

CHANNEL MASTER
MODEL 6512-2

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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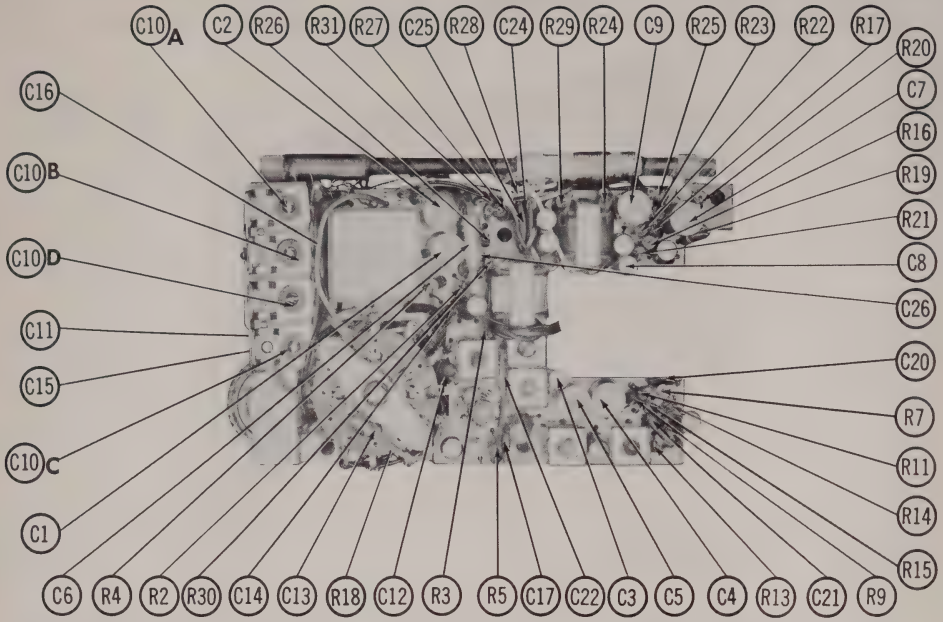
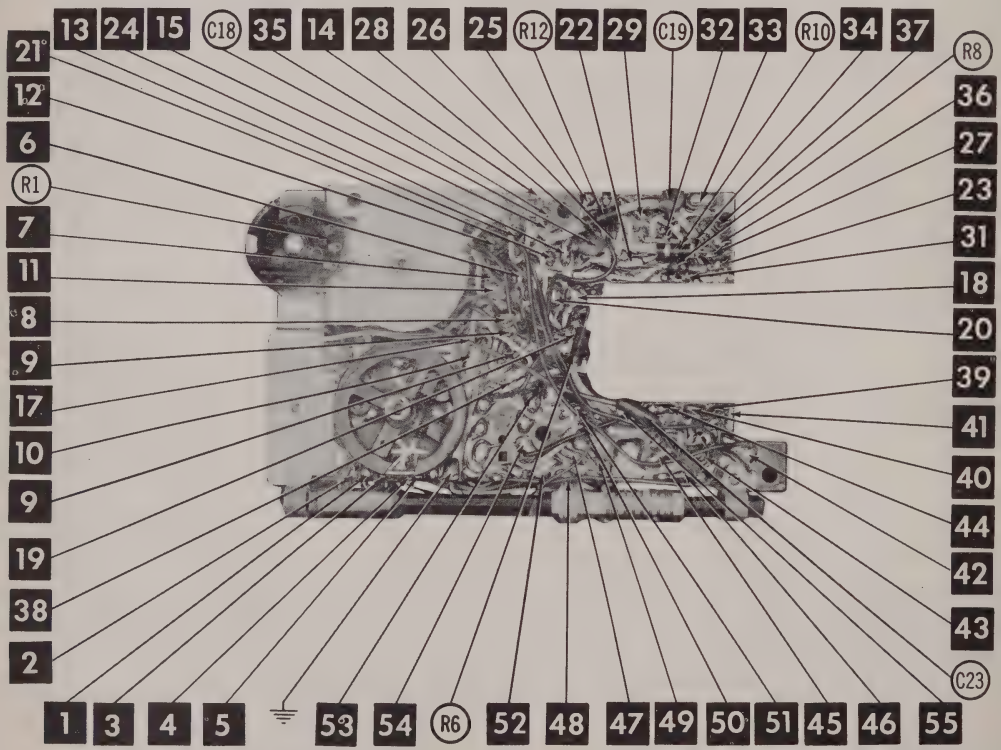
KF993

SET 570 FOLDER 7



CHASSIS TOP VIEW-CAPACITOR & RESISTOR IDENT.



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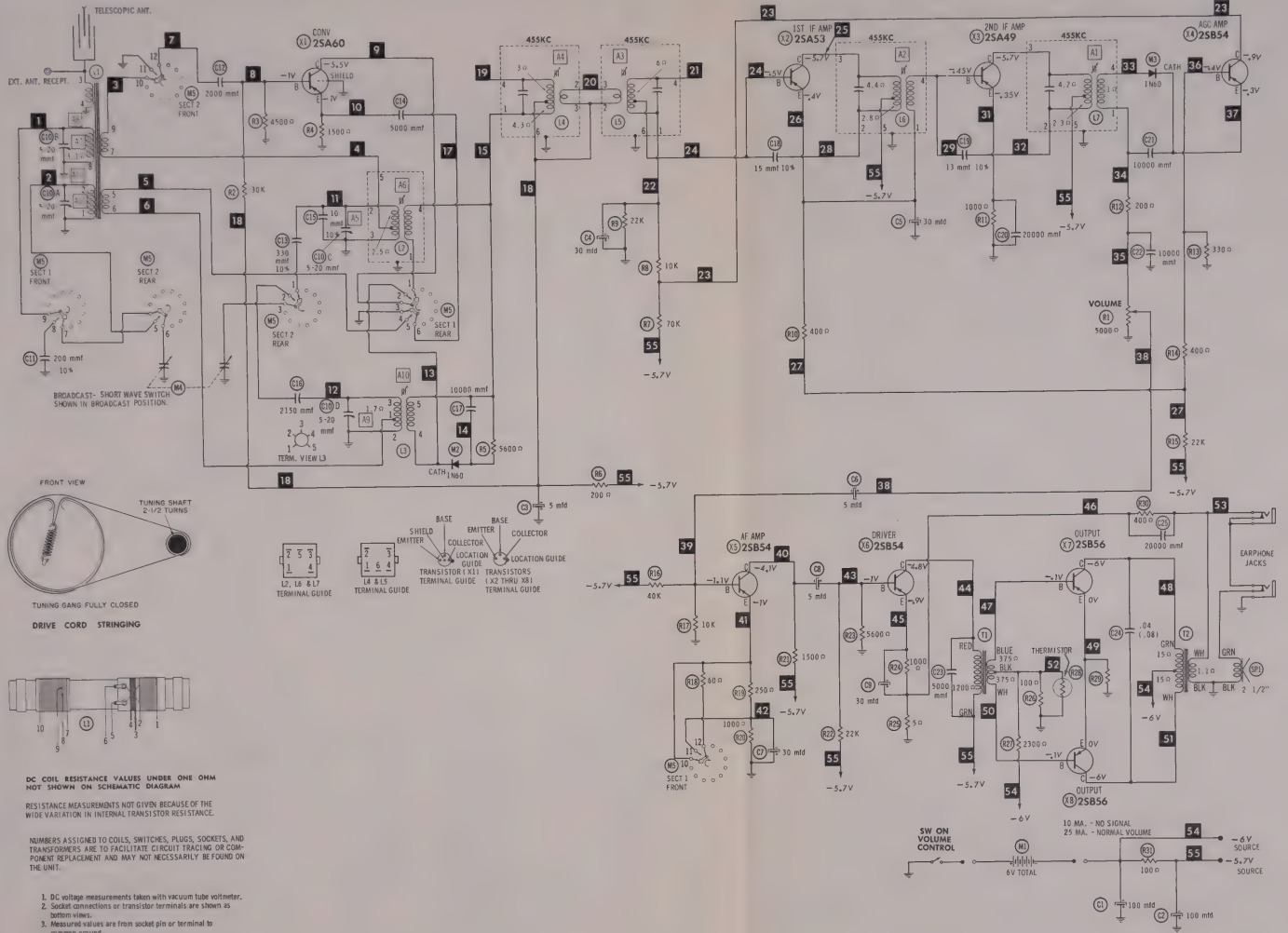

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

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CHANNEL MASTER MODEL 6512-2

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2SA60	Converter			PNP
X2	2SA53	1st IF Amplifier	2N410	2N483	PNP
X3	2SA49	2nd IF Amplifier	2N410	2N483	PNP
X4	2SB54	AGC Amplifier	2N406	2N362	PNP
X5	2SB54	AF Amplifier	2N406	2N362	PNP
X6	2SB54	Driver	2N406	2N362	PNP
X7	2SB56	Output	2N408	2N632	PNP
X8	2SB56	Output	2N408	2N632	PNP

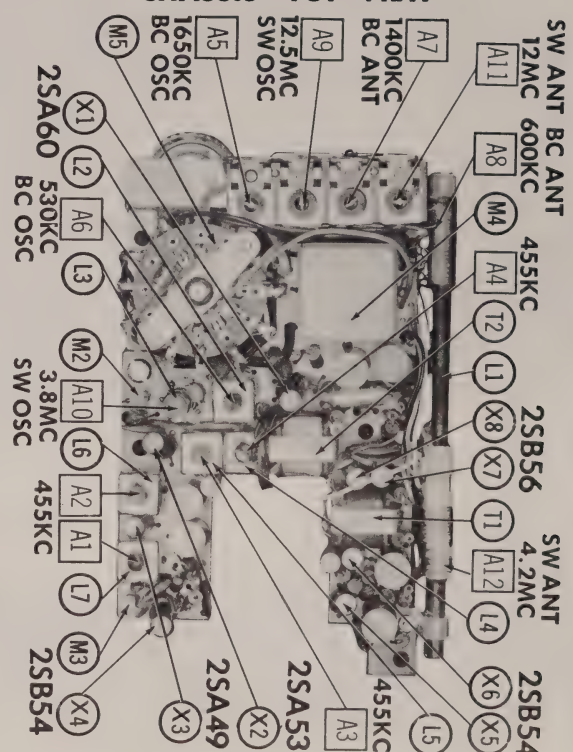
ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Channel Master PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	100	6	A029	BCD6100	ECPB117	MT1-18	TT6X100	MLV100-6	TE-1102
C2	100	6	A029	BCD6100	ECPB117	MT1-18	TT6X100	MLV100-6	TE-1102
C3	5	6	A010	PTT21	NLW5-15	MT1-3	TT6X5	MLV5-6	TE-1084
C4	30	6	A009	BCD6025	ECPB412	MT1-13	TT6X30	MLV30-6	TE-1092
C5	30	6	A009	BCD6025	ECPB412	MT1-13	TT6X30	MLV30-6	TE-1092
C6	5	6	A010	PTT21	NLW5-15	MT1-3	TT6X5	MLV5-6	TE-1084
C7	30	6	A009	BCD6025	ECPB412	MT1-13	TT6X30	MLV30-6	TE-1092
C8	5	6	A010	PTT21	NLW5-15	MT1-3	TT6X5	MLV5-6	TE-1084
C9	30	6	A009	BCD6025	ECPB412	MT1-13	TT6X30	MLV30-6	TE-1092

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10A	5-20							
B	5-20							
C	5-20	#A024						
D	5-20							
C11	200 10%			D6-201	L10T2	CCD-201	GP320	10TS-T20
C12	.002		SI 2000	D6-202	BYA10D2	CCD-202	GP220	10TS-D20
C13	330 10%			D6-331	L10T33	CCD-331	GP333	10TS-T33
C14	.005			D6-502	BYA10D5	CCD-502	TA-250	TG-D50
C15	10 25V		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C16	2150mmf			D6-222	BYA10D22	CCD-222	GP222	10TS-D22
C17	.01			DM-103	H-05S1		TA-110	TG-S10
C18	15 10%		DI-15	DD-150	L10Q15	CCD-150	CNO-415	10TS-Q15

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C19	13 10%		DI-12	DD-120	L10Q12	CCD-120	CNO-412	10TS-Q12
C20	.02 25V			DA-203	H-05S2		TA-120	TG-S20
C21	.01			DM-103	H-05S1		TA-110	TG-S10
C22	.01			DM-103	H-05S1		TA-110	TG-S10
C23	.005			D6-502	BYA10D5	CCD-502	TA-250	TG-D50
C24	.04	(.08) †		DA-503	H-05S5		TA-150	TG-S50
C25	.04			DA-503	H-05S5		TA-150	TG-S50
C26	.02			DA-203	H-05S2		TA-120	TG-S20

Channel Master Part Number.
† Alternate Part Number.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			Channel Master PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
K1	Volume & Switch	5000Ω	E015 #				

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	30K				R17	10K			
R3	4500Ω				R18	60Ω			
R4	1500Ω				R19	250Ω			
R5	5600Ω				R20	1000Ω			
R6	200Ω				R21	1500Ω			
R7	70K				R22	22K			
R8	10K				R23	5600Ω			
R9	22K				R24	1000Ω			
R10	400Ω				R25	5Ω			
R11	1000Ω				R26	100Ω			
R12	200Ω				R27	2300Ω			
R13	330Ω				R28	Thermistor			Pt. #F150
R14	400Ω				R29	5Ω			
R15	22K				R30	400Ω			
R16	40K				R31	100Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Channel Master PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	E026					
L2	BC Osc.	F202					
L3	SW Osc.	F200					
L4	1st IF Primary	C046					
L5	1st IF Secondary	C047					
L6	2nd IF	C048					
L7	3rd IF	C049					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4	1	C017			TR-13①		① Use Original Frame

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	250Ω CT	6-8Ω	C018					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Channel Master PART No.	QUAM PART No.	
SP1	2½"	PM	6-8Ω	G092	25A07	

BATTERIES

ITEM No.	VOLTAGE	Channel Master PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1½			930		1015		M-15R	4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Channel Master PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	1N60	F136		1N60	Limiter
M3	1N60	F136		1N60	Detector

MISCELLANEOUS

ITEM No.	PART NAME	Channel Master PART No.	NOTES
M4	Tuning Cap.	A025	2 Gang
M5	Switch	E017	Band Selector

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	F159	
Knob	F015	Tuning
Knob	F019	Volume
Knob	F014	Function
Cabinet	G009	Black
Cabinet	G010	Red
Case	F065	Leather Carrying, With Strap

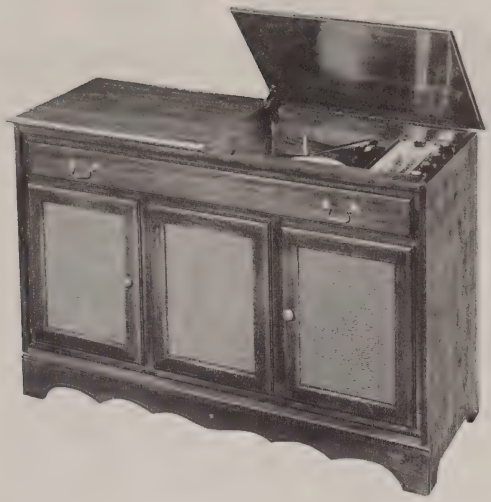
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder

**COLUMBIA
MODEL C1469**

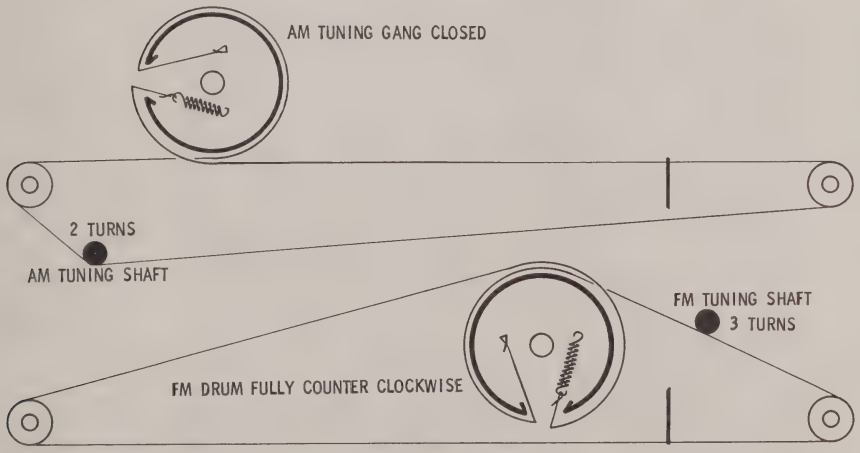
COLUMBIA
MODEL C1469



TRADE NAME	Columbia Model C1469
MANUFACTURER	Columbia Phonographs, Dept. of CBS Electronics, 405 Park Ave., New York, N. Y.
TYPE SET	AC Operated 9 Tube FM-AM Tuner, 7 Tube Stereo Amplifier and 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING Tuner: 40 Watts, .38 Amp. @117 Volts AC Amp: 190 Watts, 1.72 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540 – 1600KC FREQ. MOD. 88 – 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE GLASER-STEERS GS-77 (REVISED) – PHOTOFACT SET 482 FOLDER 11

DIAL CORD STRINGING



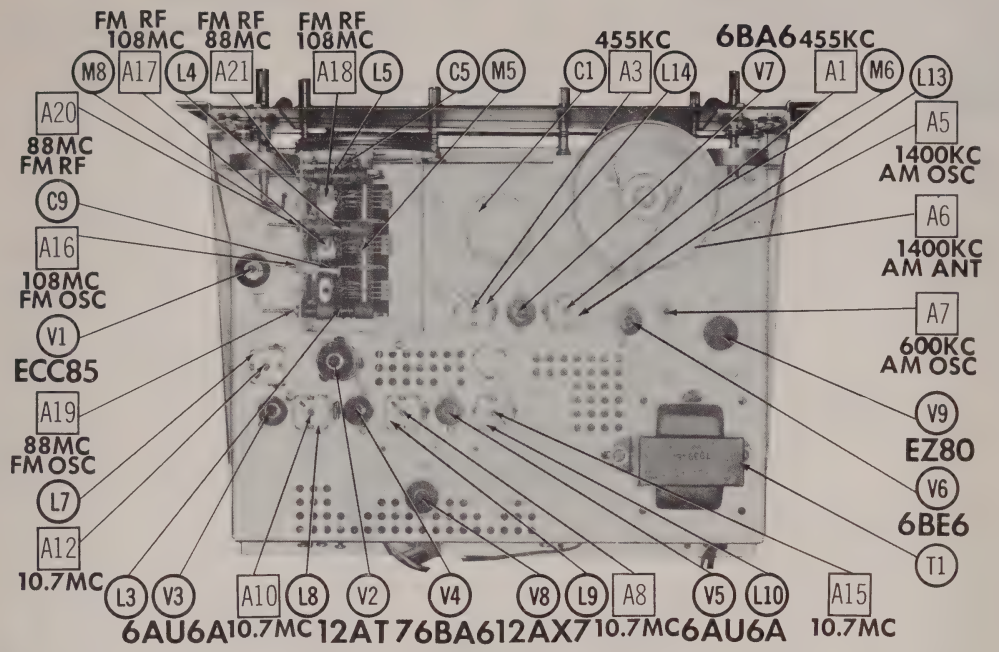
FRONT VIEW

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

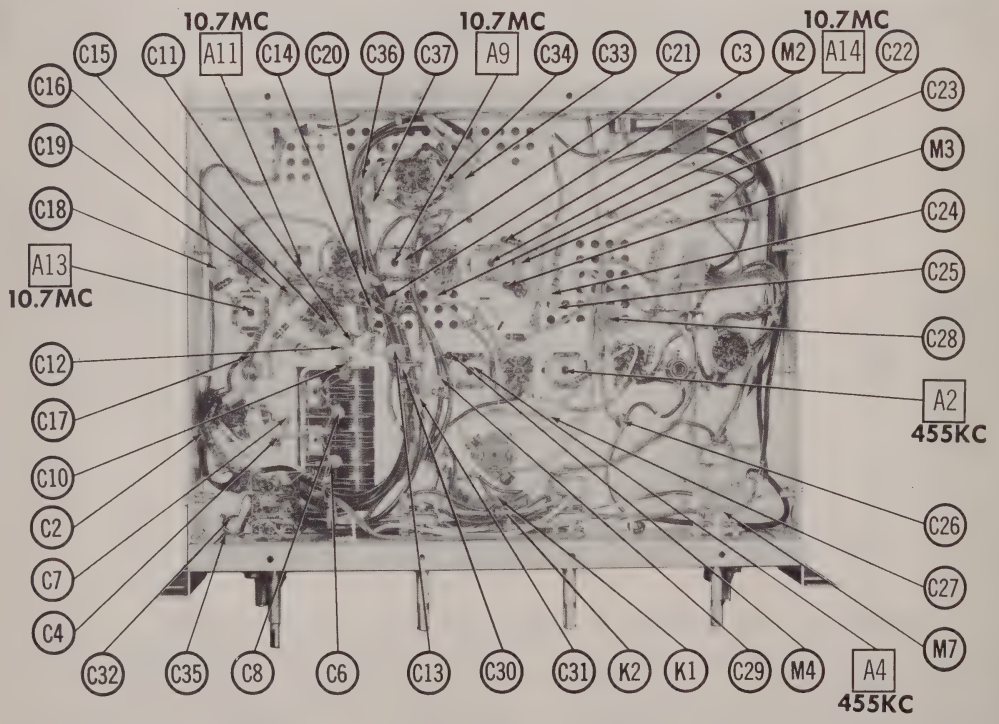
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KN961

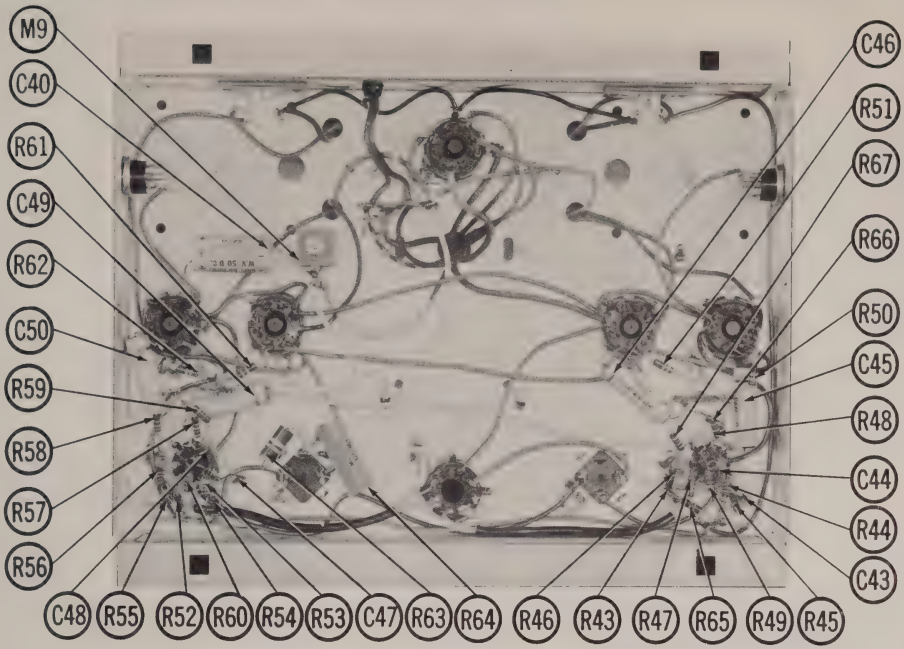
SET 570 FOLDER 8



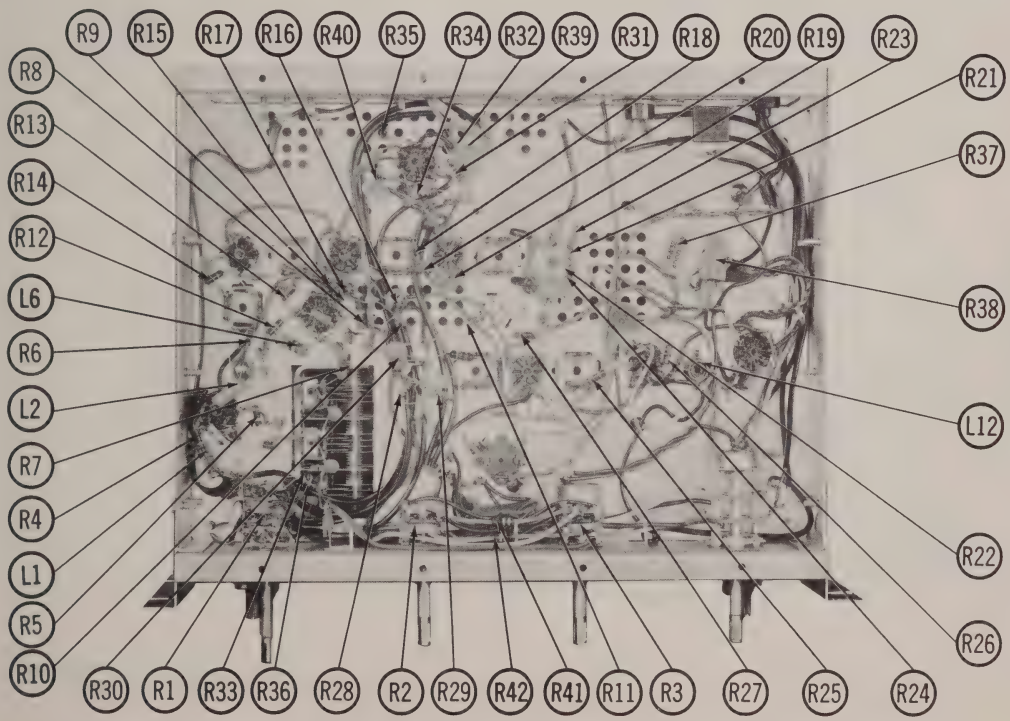
TUNER CHASSIS-TOP VIEW



TUNER CHASSIS BOTTOM VIEW-ALIGN., CAPACITOR & MISC. IDENT.



AMP CHASSIS-BOTTOM VIEW



TUNER CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Mixer	ECC85 (6AQ8)*
V2	FM Osc. -FM AFC	12AT7
V3	1st FM IF Amplifier	6AU6A
V4	2nd FM IF Amplifier	6BA6
V5	FM Limiter	6AU6A
V6	AM Converter	6BE6
V7	AM IF Amplifier	6BA6
V8	Channel A AF Amp. - Channel B AF Amp.	12AX7A
V9	Rectifier	EZ80/6V4

* Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▲40	450	11B782	AFH3-44	C0350	XC3-40	FP377.1	TMT-3748	TVL-3787
B	■40	450							
C	▲40	450							

FIXED CAPACITORS

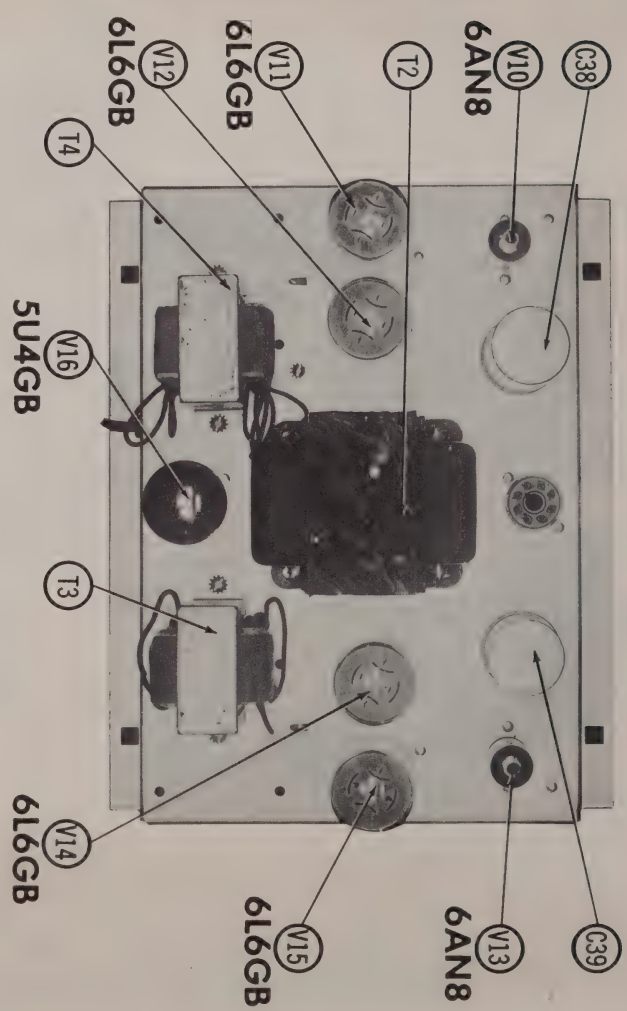
ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C3	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	47 N750		N750-D1 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C5	6				C10V6C			
C6	2.2 NPO ±.2mmf		NPO-D1 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C7	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	2.2 NPO ±.2mmf		NPO-D1 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C9								
C10	100 N750		N750-S1 100	TCN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C11	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	10 N5600					*		
C13	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	470		D1-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C15	47 N5600					*		
C16	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C19	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C20	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C21	47 N750		N750-D1 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C22	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	100 N750		N750-S1 100	TCN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C24	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C25	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C26	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C27	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C28	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C29	100		D1-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C30	100		D1-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C31	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C32	22		D1-22	DD-220	L10Q22	CCD-220	GP422	10TS-Q22
C33	.1 100V			DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P10
C34	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C35	22		D1-22	DD-220	L10Q22	CCD-220	GP422	10TS-Q22
C36	.1 100V			DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P10
C37	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Loudness, Channel B	3meg①	9B663 ②				
B	Loudness, Channel A	3meg①					
C	Balance	4meg					

AMP CHASSIS—TOP VIEW



TUNER PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R2A	Bass, Channel A	1meg	9B658	B-69, SR-69 or	AD47-1meg-S/		FA16L, RU16L,
B	Bass, Channel B	1meg		(AB-69, SR-69, AK-11)	KSS-3		CS3500
R3A	Treble, Channel A	1meg	9B659	B-69, SR-69, KR-1	AD47-1meg-S/		FA16L, RU16L,
B	Treble, Channel B With Switch (Off-On)	1meg		or (AB-69, SR-69, AK-11, KR-1)	KSS-3, SWE-12		CS3500, US41

① 800KΩ Tap.
② Some versions may use Part #9B660.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	100Ω				R24	68K			
R5	2.2meg				R25	2.2meg			
R6	47K				R26	22K			
R7	22K				R27	100Ω			
R8	1200Ω 1W				R28	2.2meg			
R9	100Ω				R29	47K			
R10	470K				R30	1meg			
R11	2.2meg				R31	270K			
R12	10K				R32	3300Ω			
R13	1000Ω				R33	100K			
R14	1meg				R34	270K			
R15	1000Ω				R35	3300Ω			
R16	1000Ω				R36	100K			
R17	68Ω				R37	400Ω 3W	PW3-400	3W-SQ-400	
R18	100K				R38	400Ω 3W	PW3-400	3W-SQ-400	
R19	15K				R39	1meg			Note 1
R20	15K				R40	1meg			Note 1
R21	100K				R41	100K			
R22	100K				R42	100K			
R23	100K								

Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		COLUMBIA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(.27uh)	21B217 ①		4584	RTC-8512	T957	① IRC Part #CLA
L2	RF Choke(3.3uh)	21B215 ①	BC-564	4608	RTC-8518	T858	
L3	FM RF	20B416					
L4	FM Mixer	20B416					
L5	FM Osc.	20B421					
L6	RF Choke (1uh)	21B216 ①	BC-561	4602	RTC-8515	T855	
L7	1st FM IF	20B417	FM-254	1463	RTC-8599	T633	
L8	2nd FM IF	20B418	FM-254	1463	RTC-8599	T633	
L9	3rd FM IF	20B419	FM-254	1463	RTC-8599	T633	
L10	Discriminator	20B420	FM-253	1464	RTC-8665	T634	
L11	Loopstick	20B414	BC-419	705-A		T532	
L12	AM Osc.	20B415	BC-393	69-OSC	RTC-8646	T504	
L13	1st AM IF	20B411	BC-352	12-C1	RTC-8632	T607	
L14	2nd AM IF	20B411	BC-353	12-C2	RTC-8633	T608	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ .38A	300VCT ⓐ .060A DC	6.3V ⓐ 3.4A	2B123					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	COLUMBIA PART No.	REPLACEMENT DATA
K1	Tone Comp.	100mmf, .002mfd, .002mfd, .02mfd, 10K, 150K	PC-S225	
K2	Tone Comp.	100mmf, .002mfd, .002mfd, .02mfd, 10K, 150K	PC-S225	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	COLUMBIA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	SC-7D		17D	N-41SD*	26SD	2604D* 2605*	9T-SD	N-9T-SD	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		COLUMBIA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	1N541	20B410		1N295	
M3	1N541	20B410		1N295	Discriminator
M4	1N87G	20B409		1N87	AM Detector

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M5	Tuning Cap.	14B120	FM
M6	Tuning Cap.	14B121	AM, 2 Gang (Ant. 24—484mmf, Osc. 8—160mmf)
M7	Switch	19B778	Function Selector (Rotary Type)
M8	Switch	19B779	AFC (Momentary Push Type, On FM Tuning Shaft)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	19B774	
Dial Pointer	19B771	Red
Knob	8B557	Black, Volume
Knob	8B558	Black, Bass, Function, Treble
Knob	8B559	Black, Balance
Knob	8B560	Black, Tuning
Cabinet	17B143	Mahogany
Cabinet	17B144	Cherry

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication. Set volume control at maximum position.
Suggested Alignment Tools:

A1 thru A4, A8 thru A15... GENERAL CEMENT #5097, 8727
WALSCO #2515

A5, A7, A17, A18..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

A6..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

A16, A19, A20, A21..... GENERAL CEMENT #8721, 8722
WALSCO #2519

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ 30% AM)	(AM) Tuning gang fully open.	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	High side thru 4.7mmf to AM antenna terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6	"
3.	"	600KC	600KC	"	A7	Adjust for maximum deflection while rocking tuning gang. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

Short AFC Switch

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru 2.2mmf to FM antenna terminal. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point Ⓑ. Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1meg to Point Ⓒ Common to chassis.	A14	"
6.	"	"	"	DC probe to point Ⓓ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.
Short AFC Switch.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru 2.2mmf to FM antenna terminal. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. amp. thru 47K to point Ⓑ. Low side to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. thru 47K to point Ⓒ. Low side to chassis.	A14	"
6.	"	"	"	Vert. amp. to point Ⓓ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

Short AFC Switch.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru 2.2mmf to FM antenna terminal. Low side to chassis.	108MC (Unmod.)	(FM) 108MC	DC probe thru 1meg to point Ⓑ. Common to chassis.	A16, A17, A18	Adjust for maximum deflection.
8.	"	88MC	88MC	"	A19, A20, A21	"

FIG. 1

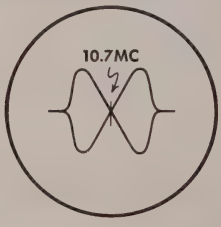
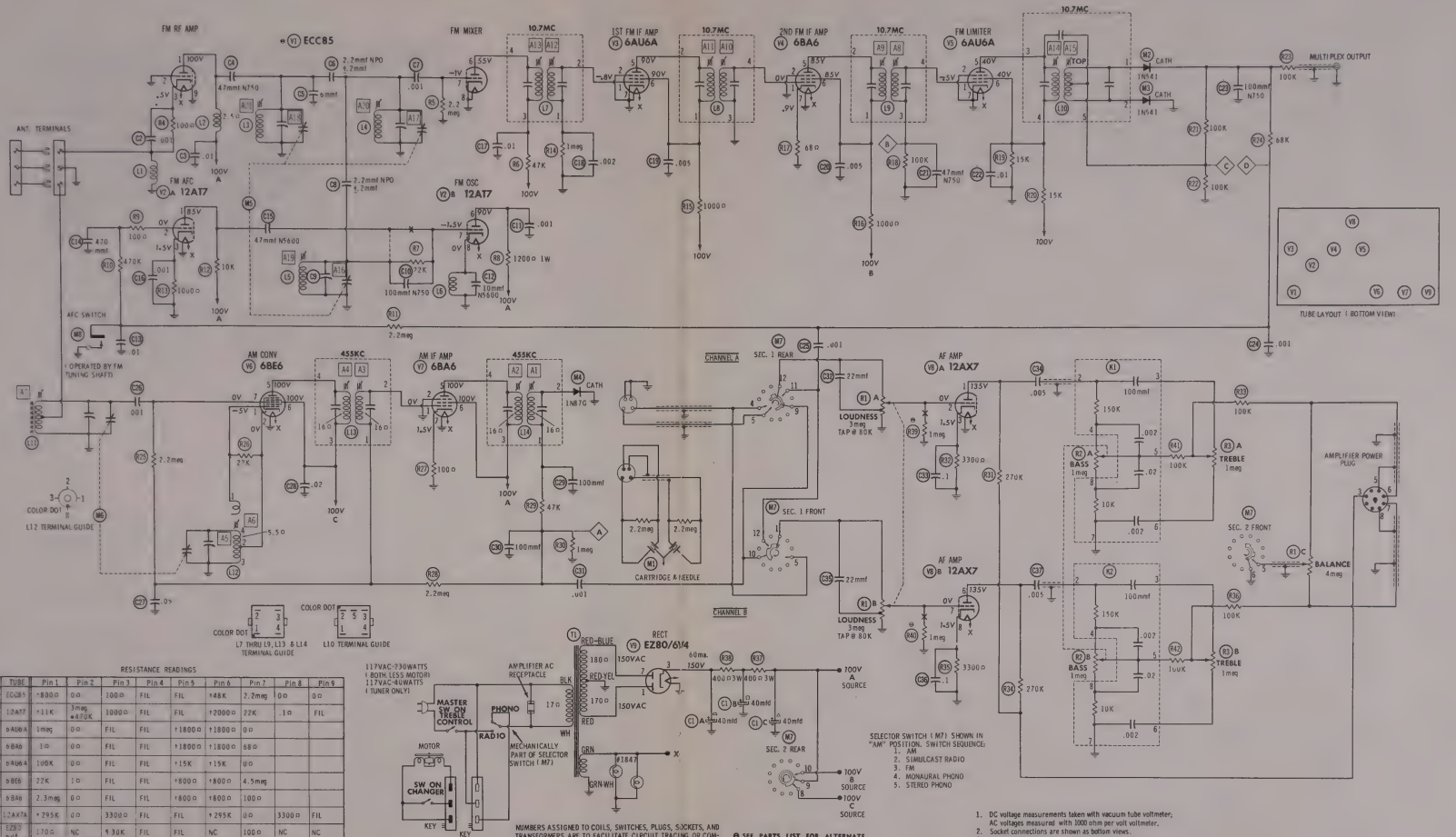


FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	†800Ω	0Ω	100Ω	FIL	FIL	†48K	2.2meg	0Ω	0Ω
V2	12AT7	†11K	3meg ■470K	100Ω	FIL	FIL	†2000Ω	22K	1Ω	FIL
V3	6AU6A	1meg	0Ω	FIL	FIL	†1800Ω	†1800Ω	0Ω		
V4	6BA6	1Ω	0Ω	FIL	FIL	†1800Ω	†1800Ω	68Ω		
V5	6AU6A	100K	0Ω	FIL	FIL	†15K	†15K	0Ω		
V6	6BE6	22K	1Ω	FIL	FIL	†800Ω	†800Ω	4.5meg		
V7	6BA6	2.3meg	0Ω	FIL	FIL	†800Ω	†800Ω	100Ω		
V8	12AX7A	†295K	0Ω	3300Ω	FIL	FIL	†295K	0Ω	3300Ω	FIL
V9	EZ80 or 6V4	170Ω	NC	¶30K	FIL	FIL	NC	100Ω	NC	NC

ALL MEASUREMENTS MADE IN "SIMULCAST" POSITION.
† MEASURED FROM PIN 3 OF V9.
‡ MEASURED FROM PIN 2 OF V16.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED WITH "AFC" OFF.
NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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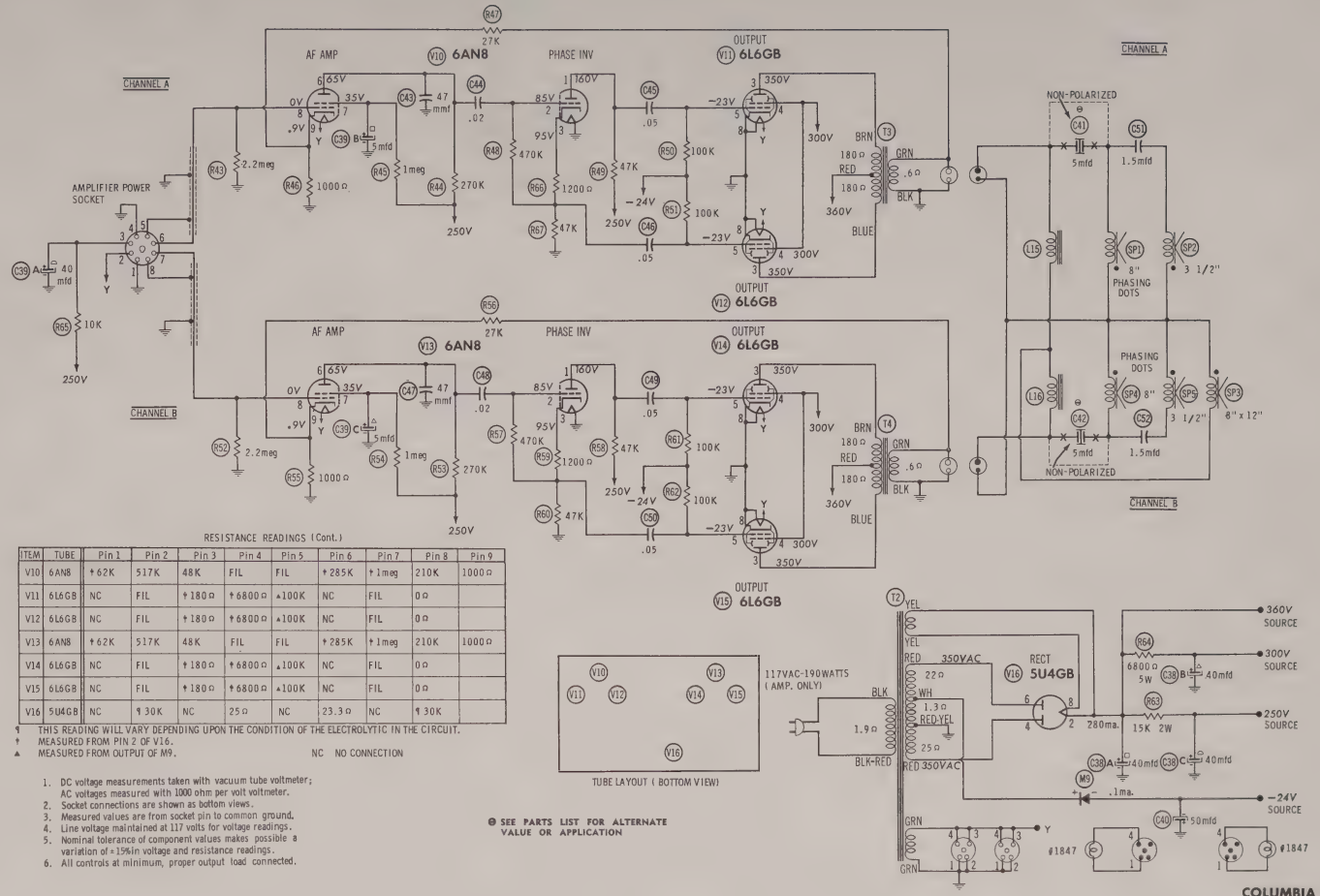
COLUMBIA
MODEL C1469

TUNER SCHEMATIC

SET 570 FOLDER 8



RESISTANCE READINGS (Cont.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V10	6AN8	†62K	517K	48K	FIL	FIL	†285K	†1meg	210K	1000Ω
V11	6L6GB	NC	FIL	†180Ω	†6800Ω	▲100K	NC	FIL	0Ω	
V12	6L6GB	NC	FIL	†180Ω	†6800Ω	▲100K	NC	FIL	0Ω	
V13	6AN8	†62K	517K	48K	FIL	FIL	†285K	†1meg	210K	1000Ω
V14	6L6GB	NC	FIL	†180Ω	†6800Ω	▲100K	NC	FIL	0Ω	
V15	6L6GB	NC	FIL	†180Ω	†6800Ω	▲100K	NC	FIL	0Ω	
V16	5U4GB	NC	¶30K	NC	25Ω	NC	23.3Ω	NC	¶30K	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 2 OF V16.
▲ MEASURED FROM OUTPUT OF M9. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

COLUMBIA MODEL C1469

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AMP SCHEMATIC
COLUMBIA MODEL C1469

AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆ TYPE
V10	Channel A AF Amp. - Phase Inverter	6AN8
V11	Channel A Output	6L6GB
V12	Channel A Output	6L6GB
V13	Channel B AF Amp. - Phase Inverter	6AN8
V14	Channel B Output	6L6GB
V15	Channel B Output	6L6GB
V16	Rectifier	5U4GB

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C38A	■40	450	11B782	AFH3-44	C0350	XC3-40	FP377.1	TMT-3748	TVL-3787
B	▲40	450							
C	▲40	450							
C39A	▲40	450	11B781	AFH3-41	C0320	XC3-9	FP396.2	TMT-3736	TVL-3783
B	■5	450							
C	▲5	450							
C40	50	50	11B783	PRS1350	BR505	QT1-15	TC39	TD-50-50	TVA-1308
C41	5	50NP	Note 1	PRS7405	BBR4-150	QT4-1	TCN505		TVANS-1303.1*
C42	5	50NP	Note 1	PRS7405	BBR4-150	QT4-1	TCN505		TVANS-1303.1*

* Not normally in distributor's stock. Available thru distributor on order thru manufacturer.
Note 1. Not used in some versions.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C43	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C44	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C45	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C46	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C47	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C48	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C49	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C50	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C51	1.5mfd 200V				WMF2W1P5E			
C52	1.5mfd 200V				WMF2W1P5E			

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA iRC PART No.	WORKMAN TV PART No.	REMARKS
R43	2.2meg			
R44	270K			
R45	1meg			
R46	1000Ω			
R47	27K			
R48	470K			
R49	47K			
R50	100K			
R51	100K			
R52	2.2meg			
R53	270K			
R54	1meg			
R55	1000Ω			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R56	27K			
R57	470K			
R58	47K			
R59	1200Ω			
R60	47K			
R61	100K			
R62	100K			
R63	15K 2W			
R64	6800Ω 5W	PW5-6800	5W-SQ-6800	
R65	10K			
R66	1200Ω			
R67	47K			

CROSSOVER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L15		.4Ω	.004HY	21B205					
L16		.4Ω	.004HY	21B205					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC. 1	SEC. 2						
T2	117V ⓐ 1.72A	700VCT ⓐ .280A DC Tap ⓐ 18V ⓐ .001A DC	5V ⓐ 3A	2B124					
	SEC. 3								
	6.3V ⓐ 4.8A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	6800Ω CT	6-8Ω	3B267	A-2905 ①	A-3830	24S55	S-61Z	① Drill new mounting hole(s).
T4	6800Ω CT	6-8Ω	3B267	A-2905 ①	A-3830	24S55	S-61Z	

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA COLUMBIA PART No.	QUAM PART No.	NOTES
SP1	8"	PM	6-8Ω	1B175	8A6PA	
SP2	3½"	PM	6-8Ω	1B131	3A15T	
SP3	8"x 12"	PM	6-8Ω	1B174		
SP4	8"	PM	6-8Ω	1B175	8A6PA	
SP5	3½"	PM	6-8Ω	1B131	3A15T	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA COLUMBIA PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M9	.001A	10B603	1N1763 *	65 ◆	◆ Selenium * Silicon

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

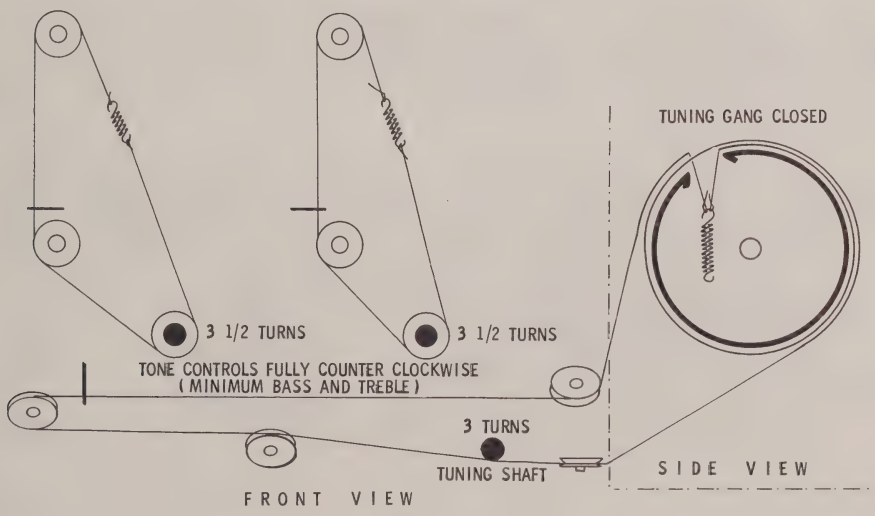
PHOTOFACT® Folder

**DELMONICO
MODEL T-11**

DELMONICO
MODEL T-11

TRADE NAME	Delmonico Model T-11
IMPORTER	Delmonico International, Div. of Thompson-Starrett Co., Inc., 120-20 Roosevelt Ave., Corona 68, N.Y.
TYPE SET	AC Operated 9 Tube FM-BC-SW Receiver
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 41 Watts, .4 Amp. @117 Volts AC
TUNING RANGES — BROADCAST	535 — 1605KC FREQ. MOD. 88 — 108MC SHORT WAVE 3.8 — 12MC

DIAL CORD STRINGING



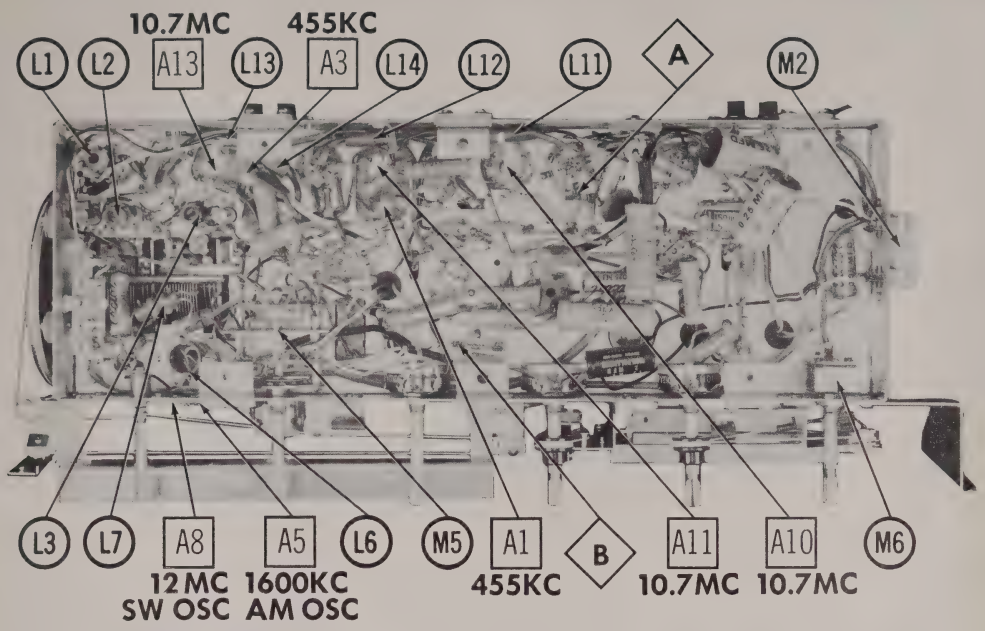
DELMONICO
MODEL T-11

SET 570 FOLDER 9

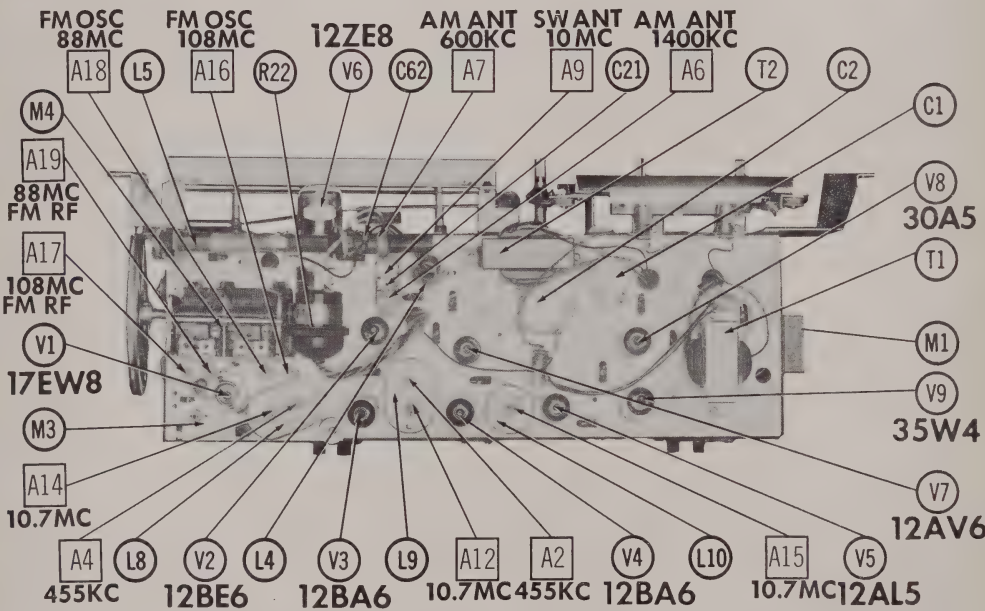
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

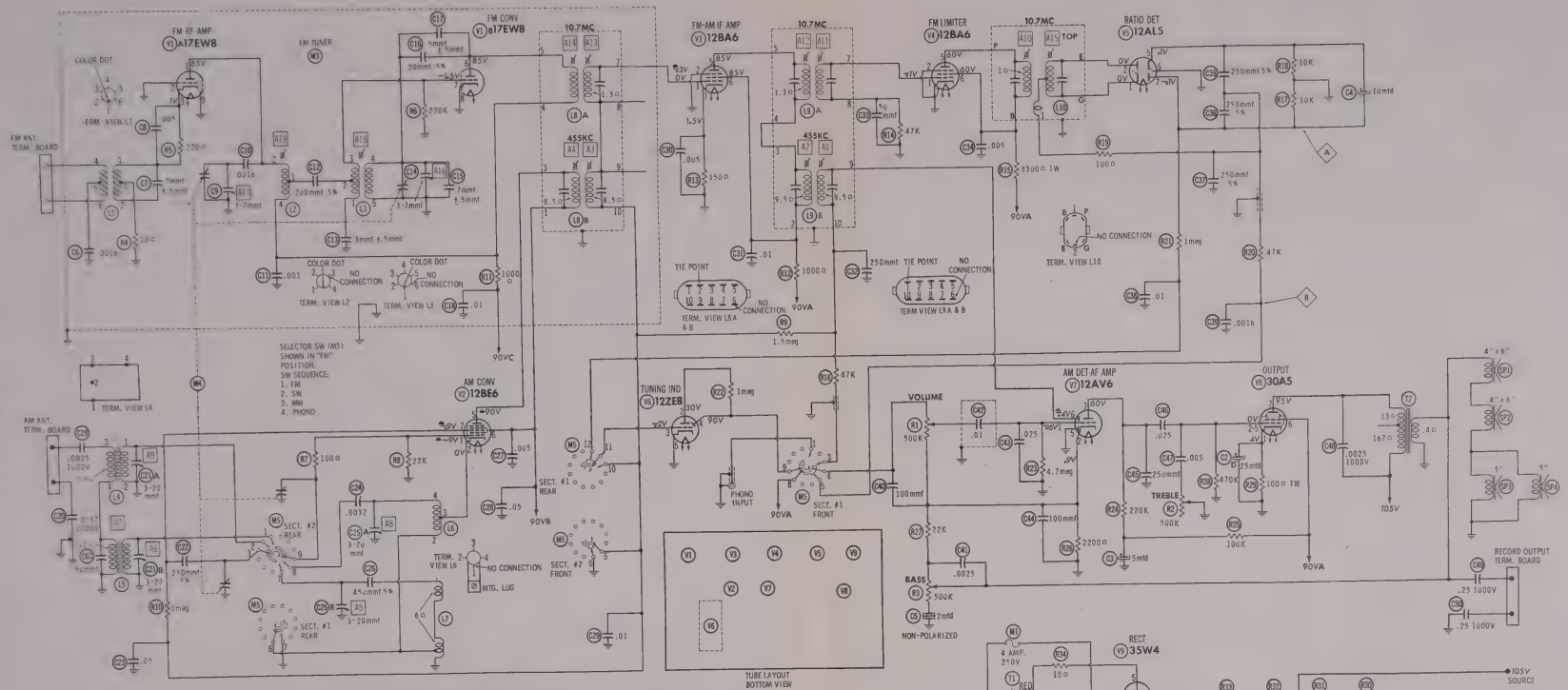
KK966



CHASSIS BOTTOM VIEW-ALIGN., INDUCTOR & MISC. IDENT.



CHASSIS-TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	17EW8	†1940Ω	0Ω	220Ω	20Ω	32Ω	†1940Ω	220K	0Ω	0Ω
V2	12BE6	22K	.1Ω	40Ω	32Ω	▲1840Ω	▲1840Ω	▲3meg		
V3	12BA6	10Ω ▲2meg	0Ω	20Ω	28Ω	†1800Ω	†1800Ω	150Ω		
V4	12BA6	47K	0Ω	28Ω	30Ω	†4100Ω	†4100Ω	0Ω		
V5	12AL5	550K	550K	20Ω	0Ω	10K	0Ω	10K		
V6	12ZE8	40Ω	†1meg	1meg ▲2meg	†820Ω	0Ω	50Ω			
V7	12AV6	4.7meg	2200Ω	20Ω	0Ω	0Ω	▲550K	†320K		
V8	30A5	100Ω	470K	50Ω	65Ω	470K	†840Ω	†580Ω		
V9	35W4	TP	NC	65Ω	60Ω	127Ω	NC	¶ INF		

ALL MEASUREMENTS MADE IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 7 OF V9.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
NC NO CONNECTION
TP TIE POINT

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DELMONICO MODEL T-11

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4, A10 thru A19..... GENERAL CEMENT #8721, 8722
WALSCO #2519

A5, A6, A8, A9..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A5	"
3.	"	1400KC	1400KC Signal.	"	A6	"
4.	"	600KC	600KC Signal.	"	A7	"
5.	High side thru .01mfd to external SW antenna terminal. Low side to chassis.	12MC	(SW) 12MC	"	A8	"
6.	"	10MC	10MC	"	A9	Adjust for maximum output. Repeat Steps 2 thru 6.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru .001mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A10, A11, A12, A13, A14	Adjust for maximum deflection.
8.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	High side thru .001mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A10, A11, A12, A13, A14	Disconnect stabilizing capacitor C4. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C4.
8.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A16, A17	Adjust for maximum deflection.
10.	"	88MC	88MC	"	A18, A19	"

FIG. 1

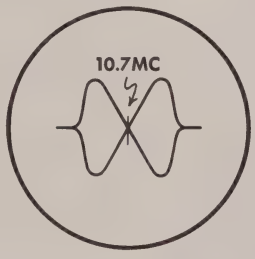
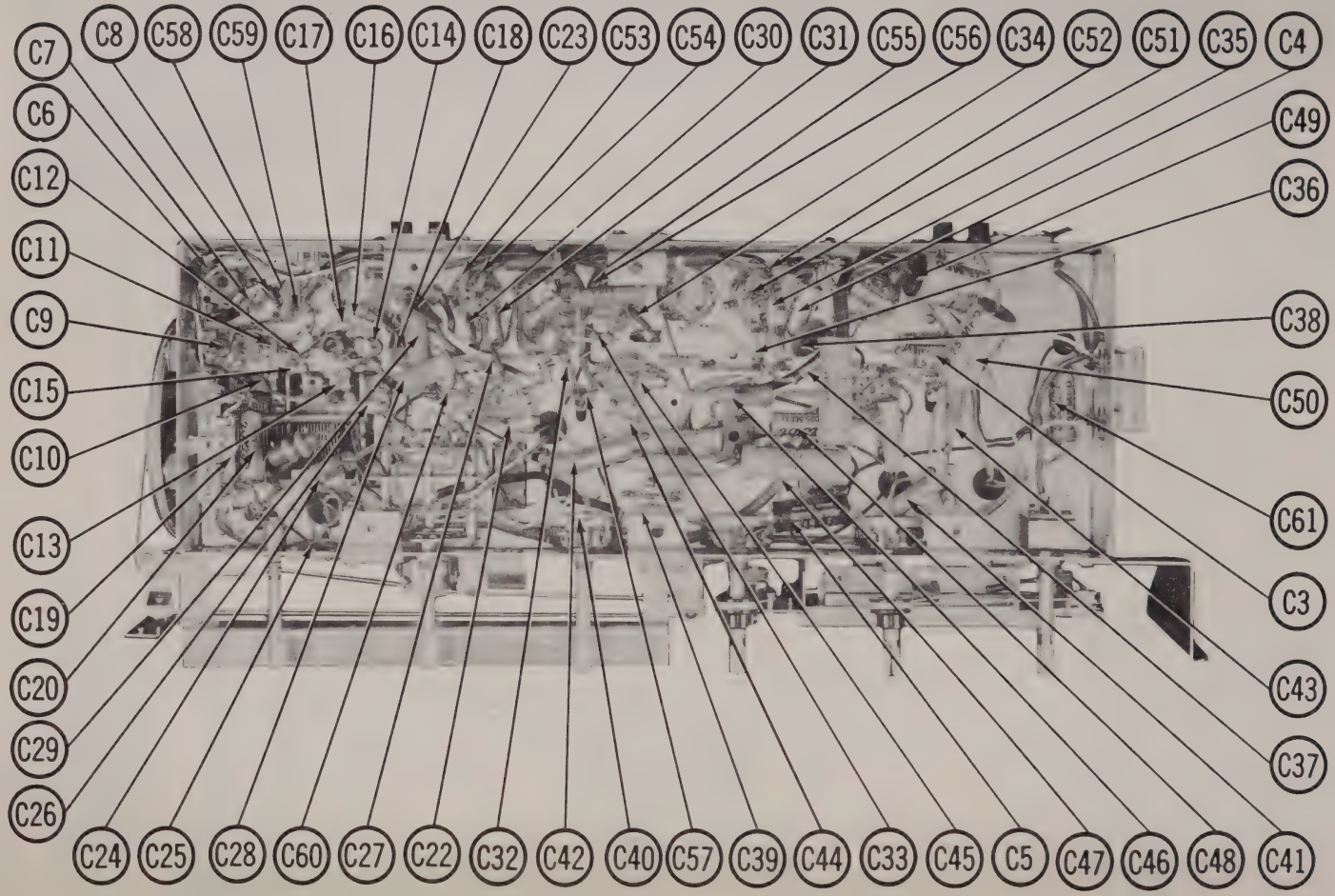


FIG. 2



CHASSIS BOTTOM VIEW-CAPACITOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier-FM Converter	17EW8
V2	AM Converter	12BE6
V3	FM IF Amp. -AM IF Amp.	12BA6
V4	FM Limiter	12BA6
V5	Ratio Detector	12AL5
V6	Tuning Indicator	12ZE8
V7	AM Det. -AF Amp.	12AV6
V8	Output	30A5
V9	Rectifier	35W4

GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ELECTROLYTIC CAPACITORS

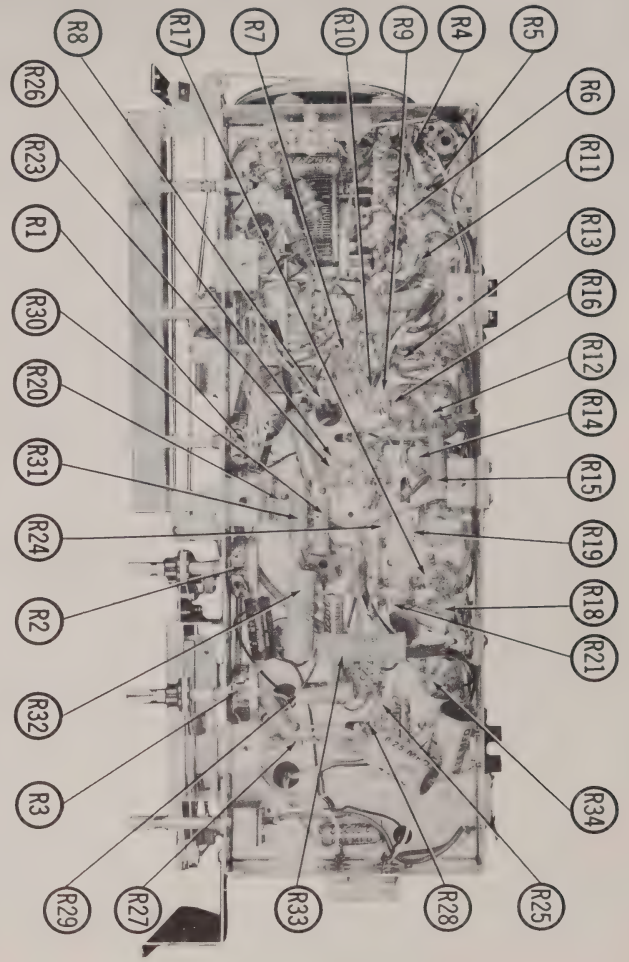
ITEM No.	RATING CAP.	RATING VOLT.	DELMONICO PART No.	REPLACEMENT DATA AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	■50	150		AFH2-15	B0150	XC2-21	FP213	TMD-2105	TVL-2432
B	▲30	150		AFH3-10	C0090	XC3-38	FP311.5	TMT-3127	TVL-3440
C2A	40	150		PRS1260	BBR25-25	QT1-11	TC26	TD-25-25	TVA-1205
B	40	150							
C	40	150							
D	25	25		SRE150V5	BBR4-150	QT1-3	TC40	TD-4-150	TVA-1403
C3	5	150		SRE50V10	BBR10-50	QT1-5	TC32	TD-10-50	TVA-1304
C4	10	50		PRS7300	BBR4-150	NPQT-1	TCN502		TVANS-1202*
C5	2	12NP							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C7	7 +.5mmf		NPO-SI 6.8	TCZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68
C8	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C9	3-7			829-7				
C10	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C11	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	200 5%			TCZ-200	22R5T2	CM-19B-201J	CNO-320	10TCC-T20
C13	3 +.5mmf		NPO-SI 3.0	TCZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C14	3-7			829-7				
C15	7 +.5mmf		NPO-SI 6.8	TCZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68
C16	20 5%			TCZ-20	C10Q2C	CCTO-200	CNO-522	10TCC-Q20
C17	5 +.5mmf		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C18	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C19	.0025 1000V		P1088N-0022	DD-252	DPMS10D25	16DP-2-252	GEM-16225	10TM-D22
C20	.0032 1000V		P1088N-0033	DD-332	DPMS10D33	16DP-2-332	GEM-10233	10TM-D30
C21A	3-20							
B	3-20							
C22	250 5%			TCZ-240	22R5T25	CM-19B-251J	MCE240	MS-325
C23	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C24	.0032		SI 3300	D6-332	BYA10D33	CCD-332	B-233	5HK-D33
C25A	3-20							
B	3-20							MS-345
C26	450 5%							
C27	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C28	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C29	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C30	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C31	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C32	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C33	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C34	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C35	250 5%			TCZ-240	22R5T25	CM-19B-250J	MCE240	MS-325
C36	250 5%			TCZ-240	22R5T25	CM-19B-250J	MCE240	MS-325
C37	250 5%			TCZ-240	22R5T25	CM-19B-250J	MCE240	MS-325
C38	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C39	.0016 200V		P288N-0015	D6-152	CUB10D15	6DP-1-152	GEM-6215	6TM-D15
C40	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C41	.0025 200V		P1088N-0022	D6-252	DPMS6D25	6DP-1-252	GEM-6225	6TM-D25
C42	.01 400V	Note 1						
C43	.025 200V		P288N-025		DPMS6S25	4DP-2-253	GEM-4125	4TM-S25
C44	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C45	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C46	.025 200V		P288N-025		DPMS6D25	4DP-2-253	GEM-4125	4TM-S25

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C47	.005 200V		P288N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D50
C48	.0025 1000V		P1088N-0022	DD-252	DPMS16D25	16DP-2-252	GEM-16225	10TM-D22
C49	.25 1000V		P1088N-25		CUB6P25			
C50	.25 1000V		P1088N-25		CUB6P25			
C51	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C52	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C53	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C54	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C55	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C56	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C57	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C58	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C59	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C60	.0016		BPD-0015	DD-162	L10D16	CCD-152	GP216	10TS-D16
C61	.05 1000V		P1088N-05		CUB10S5	16DP-5-503	GEM-1615	10TM-S50
C62	50		DI-50	DD-500	L10Q5	CCD-500	GP450	10TS-Q50

Note 1. Shielded Unit.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			DELMONICO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume	500K		B-60, or (AB-60, AK-29)			
R2	Treble	500K		B-60, or (AB-60, AK-29)			
R3	Bass	500K		B-60, or (AB-60, AK-29)			

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	10Ω				R20	47K			
R5	220Ω				R21	1meg			
R6	220K				R22	1meg			
R7	100Ω				R23	4.7meg			
R8	22K				R24	220K			
R9	1.5meg				R25	100K			
R10	1meg				R26	2200Ω			
R11	1000Ω				R27	22K			
R12	1000Ω				R28	470K			
R13	150Ω				R29	100Ω 1W			
R14	47K				R30	220Ω 1W			
R15	3300Ω 1W				R31	220Ω 1W			
R16	47K				R32	180Ω 3W	PW3-180	3W-SQ-180	
R17	10K				R33	220Ω 3W	PW3-220	3W-SQ-220	
R18	10K				R34	10Ω			
R19	100Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELMONICO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	FM Ant.						
L2	FM RF						
L3	FM Osc.						
L4	SW Ant.						
L5	Loopstick						
L6	SW Osc.						
L7	BC Osc.						
L8A	1st FM IF						
B	1st AM IF						

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELMONICO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L9A	2nd FM IF						
B	2nd AM IF						
L10	Ratio Detector						
L11	Fil. Choke (1.5uh)		BC-562	4604	RTC-8516	T856	
L12	Fil. Choke (1.5uh)		BC-562	4604	RTC-8516	T856	
L13	Fil. Choke (1.5uh)		BC-562	4604	RTC-8516	T856	
L14	Fil. Choke (1.5uh)		BC-562	4604	RTC-8516	T856	

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	PRI.	DELMONICO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.		
T1	125V @ .070A DC Tap @ 117V .250A DC Tap @ 61V @ .150A DC Tap @ 37V @ .150A DC	03052-2						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELMONICO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2400Ω	6-8Ω	03023-4	A-2902①	A-3849①	24S09 ①	S-54X①	① Drill new mounting hole(s).

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELMONICO PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	SK-2026	46A1	
SP2	4"x 6"	PM	3-4Ω	SK-2026	46A1	
SP3	5"	PM	3-4Ω	SK-2603	5A1	
SP4	5"	PM	3-4Ω	SK-2603	5A1	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELMONICO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		4A 250V			312004 (4A 250V)	357001	MTH 4	4405
M2		4A 250V			312004 (4A 250V)	357001	MTH 4	4405

MISCELLANEOUS

ITEM No.	PART NAME	DELMONICO PART No.	NOTES
M3	FM Tuner		
M4	Tuning Cap.		4 Gang
M5	Switch		Function Selector (Rotary Wafer Type)
M6	Switch		Power Off-On

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

FALCON MODEL 5TR

FALCON MODEL 5TR

TRADE NAME	Falcon Model 5TR
MANUFACTURER	Falcon Industries, Inc., 2265 W. St. Paul Street, Chicago 47, Illinois
TYPE SET	Battery Operated Transistorized AM Receiver
POWER SUPPLY	9 Volts DC RATING 22MA @ 9 Volts DC
TUNING RANGE—BROADCAST	540 — 1600KC

FALCON MODEL 5TR

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1, A2, A3..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

A4, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

A5..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KG944

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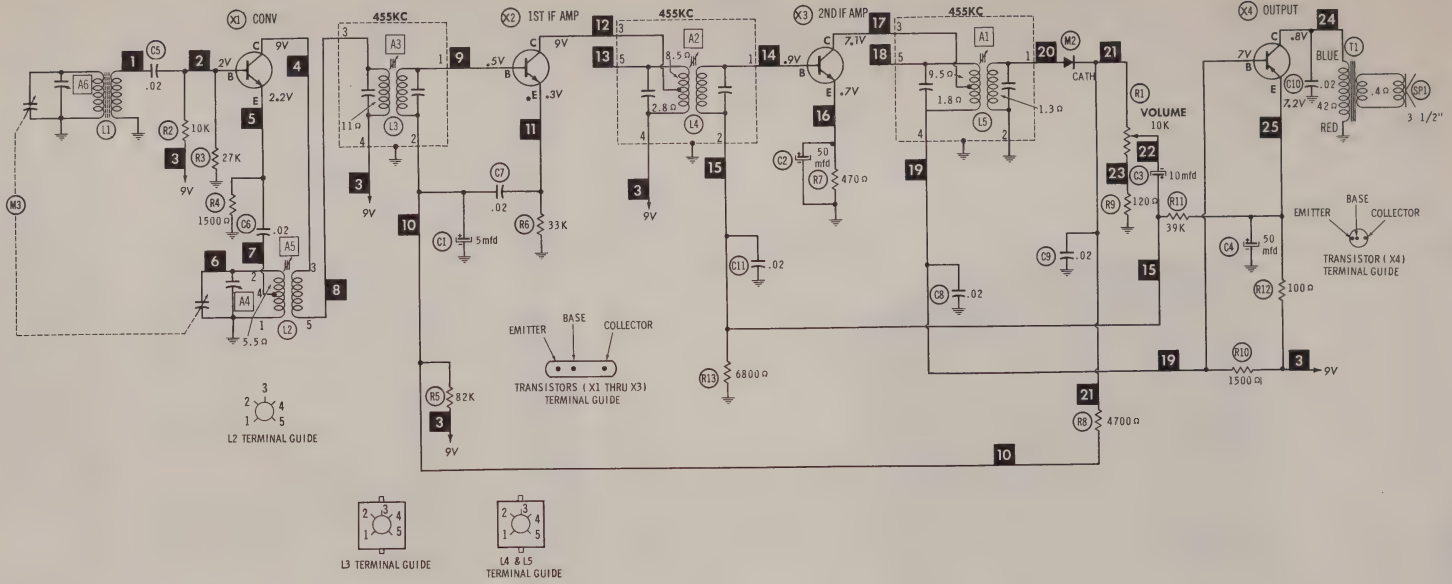
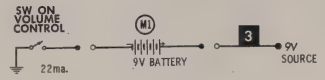
SET 570 FOLDER 10





DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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FALCON MODEL 5TR

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1		Converter (TR1)			NPN
X2		1st IF Amplifier (TR2)			NPN
X3		2nd IF Amplifier (TR3)			NPN
X4		Output (TR4)			PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FALCON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	5	10		PTT37	NLW5-15	MT1-3	TT12X5	MLV5-12	TE-1127
C2	50	10		PTT45	NLW50-10	MT1-16	TT10X50	MLV50-10	TE-1119
C3	10	6		PTT23	NLW10-6	MT1-5	TT6X10	MLV10-6	TE-1087
C4	50	10		PTT45	NLW50-10	MT1-16	TT10X50	MLV50-10	TE-1119

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C6	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C7	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C8	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C9	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C10	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C11	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			FALCON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume & Switch	10K	TT-9				

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	10K				R8	4700Ω			
R3	27K				R9	120Ω			
R4	1500Ω				R10	1500Ω			
R5	82K				R11	39K			
R6	33K				R12	100Ω			
R7	470Ω				R13	6800Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		FALCON PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick						
L2	Osc.						
L3	1st IF						
L4	2nd IF						
L5	3rd IF						

PRINTED BOARD

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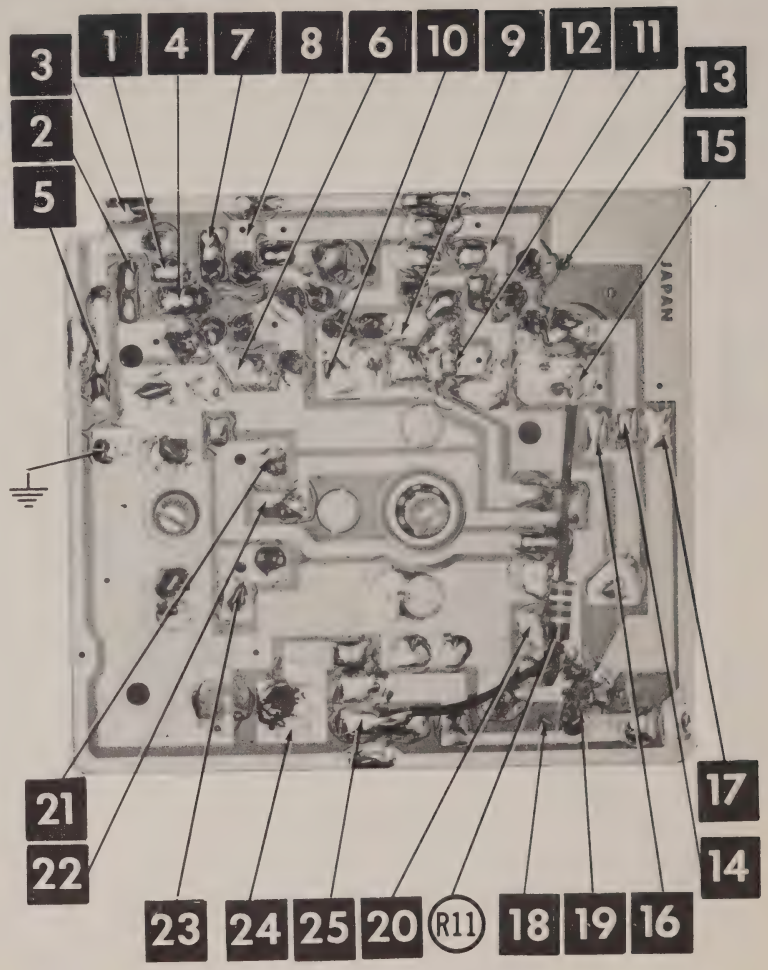


PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	FALCON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	460Ω	3-4Ω	TT2R					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	FALCON PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω		3A07	

BATTERIES

ITEM No.	VOLTAGE	FALCON PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			D6		276		M-1603	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		FALCON PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2				1N60	

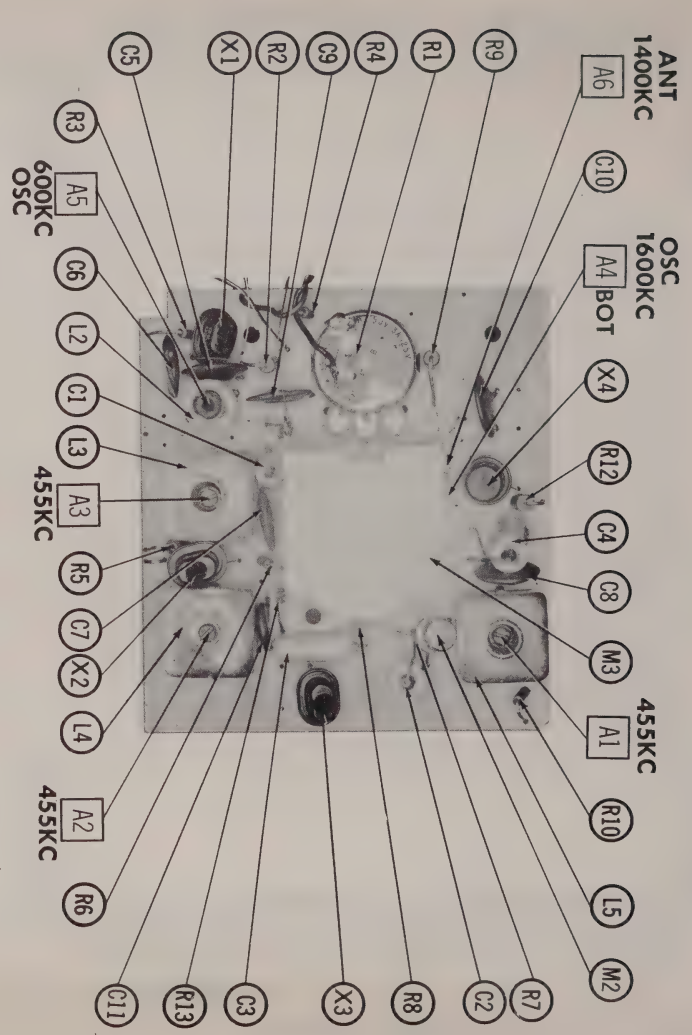
MISCELLANEOUS

ITEM No.	PART NAME	FALCON PART No.	NOTES
M3	Tuning Cap.		2 Gang

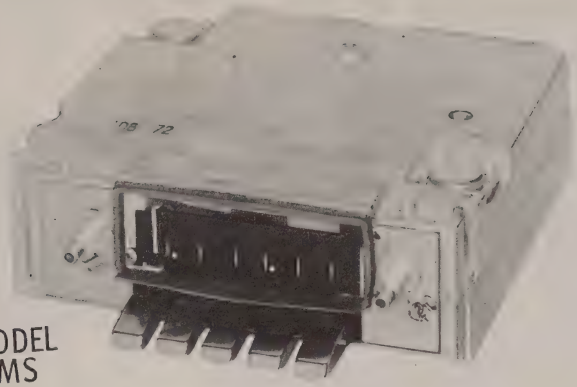
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®



FORD MODEL
1TMC, 1TMS

TRADE NAME	Ford Models 1TMC (C1VV-18810-C) For 1961 Continental, 1TMS (C1SF18810-B) For 1961 Thunderbird
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Transistorized Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.1 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 — 1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

A5, A6, A7..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

A9, A10, A11, A12.....GENERAL CEMENT #9050-L, 9150
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to collector of RF Amp. Low side to chassis.	262.5KC (400~ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacles.	1610KC	"	"	A5, A6, A7, A8	"
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A9, A10, A11, A12) out of coils. Repeat step 2.					
3.	Thru dummy to antenna receptacle.	1020KC	Tuner carriage 9/16" from high end stop.	Across voice coil.	A9, A10, A11, A12	Adjust for maximum output. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull pushbutton out, then press in firmly.
3. Repeat for remaining pushbuttons.

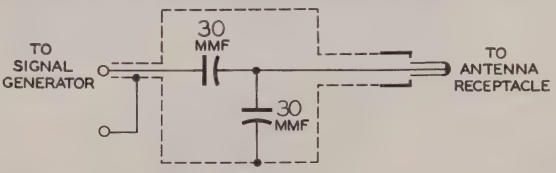


FIG. 1

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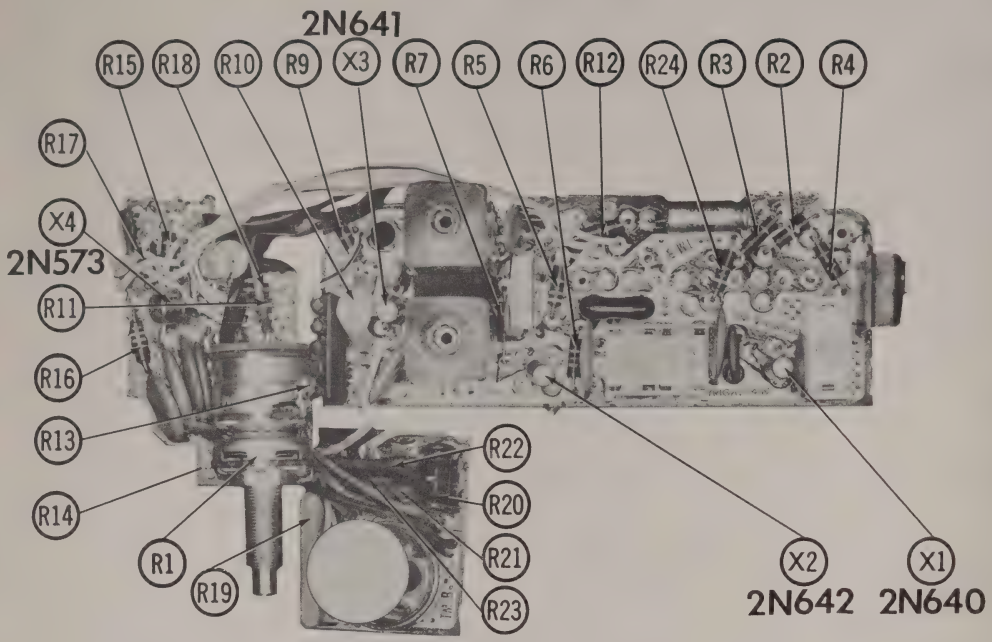
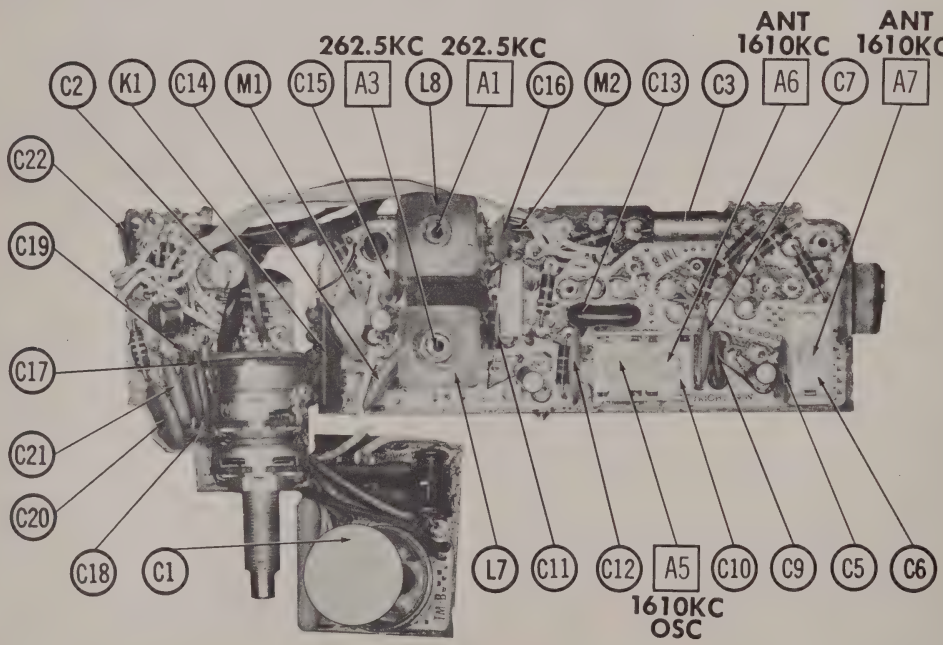
KD936

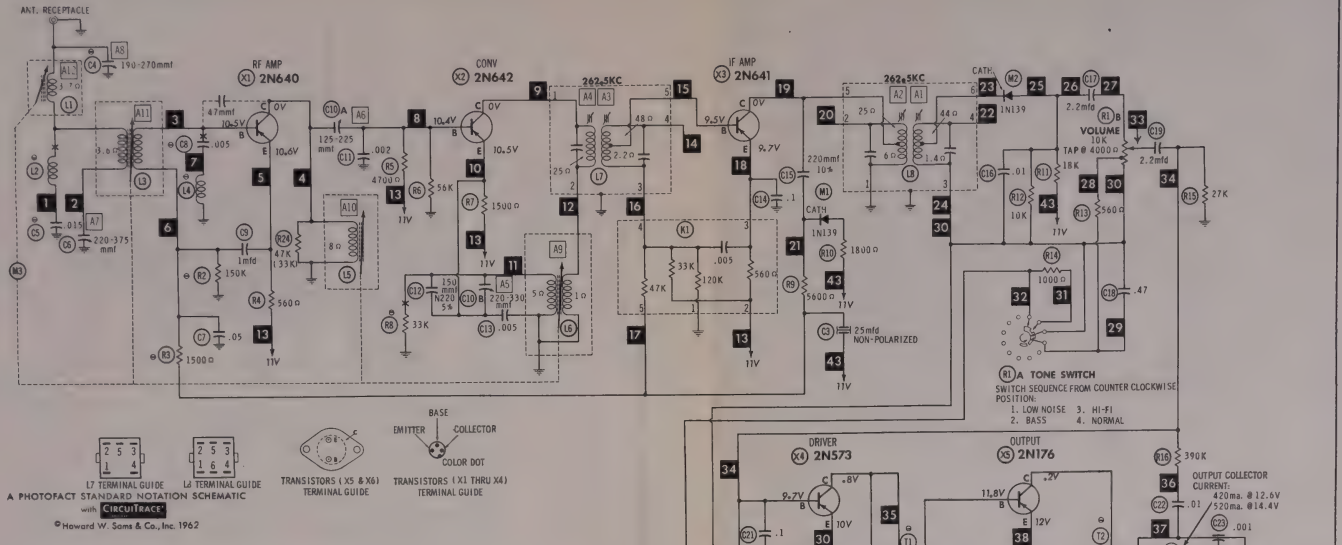
SET 570 FOLDER 11



CHASSIS TOP VIEW-RESISTOR & TRANSISTOR IDENT.



CHASSIS TOP VIEW-ALIGN., CAPACITOR & MISC. IDENT.



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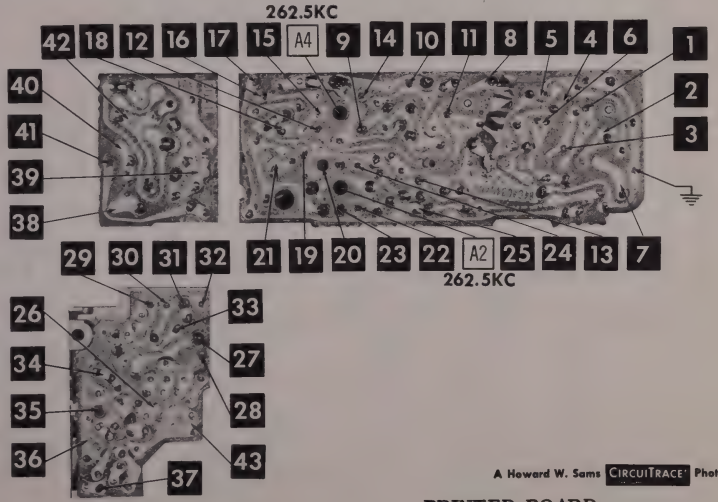


PRINTED BOARD

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FORD MODEL
1TMC, 1TMS

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2N640	RF Amplifier	2N1634		PNP
X2	2N642	Converter	2N1639		PNP
X3	2N641	IF Amplifier	2N1638		PNP
X4	2N573	Driver	2N591	2N573	PNP
X5	2N176	Output	2N176		PNP Note 1
X6	2N176	Output	2N176		PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #11M490487) to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

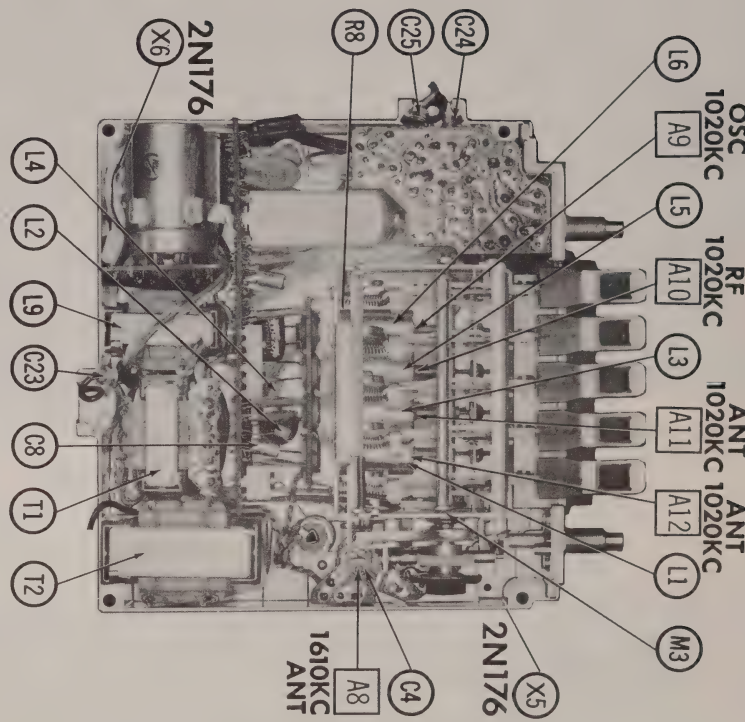
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	■500	16	23C40402A01 ①	PWH2-02-40					
B	▲500	16	①						
C2	100	3	23C564720 ①	PTT13	NLW100-3	MT1-18	TT6X100	MLV100-3	TE-1059.5
C3	25NP	6	23C40071A01	PRS7200	BBR10-150		TCN1025		TVANS-1204.1*

① In some versions C1 and C2 are combined in one 3 section unit (Part #24C40297A01).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	190-270	#20C40112A03 ①				425		
C5	.015	②	BPD-015	DD-153	BYA10S15	CCD-153	B-215	5HK-S15
C6	220-375	#20B40111A04						
C7	.05		BPD-05	DD-503	CUB2S5	DP-2-503	GP150	5HK-S50
C8	.005	③	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C9	1.0mfd 3V			UK-105				HY-135
C10A	125-225	#20C40254A01						
B	220-330							
C11	.002		BPD-002		BYA10D2	CCD-202	B-220	5HK-D20
C12	150 N220 5%	#21D40536A01				*		10TCR-T15
C13	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	.1						BT-010	TH-P10
C15	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C16	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	2.2mfd 3V			UK-225				HY-150
C18	.47mfd 3V			UK-474				HY-130
C19	2.2mfd 3V			UK-225				HY-150
C20	.1						BT-010	TH-P10

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C21	.1						BT-010	TH-P10
C22	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	.001		EF-001	MFT-1000		CCF-102	CT280A	
C24	.001		EF-001	MFT-1000		CCF-102	CT280A	
C25	.001		EF-001	MFT-1000		CCF-102	CT280A	

① Model 1TMC uses 25-150mmf in this application (Part #20C40112A01).
② Value varies from .01-.025mfd. Replace with original value.
③ Model 1TMC uses .5mfd in this application. Not used when L4 is omitted.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	Switch	18C40182A01				
B	Volume & Switch (Off-On)	10K 4000Ω Tap					

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R2	150K			Note 1
R3	1500Ω			Note 2
R4	560Ω			
R5	4700Ω			
R6	56K			
R7	1500Ω			
R8	33K			Note 4
R9	5600Ω			
R10	1800Ω			
R11	18K			
R12	10K			
R13	560Ω			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R16	1000Ω			
R15	27K			
R16	390K			
R17	4700Ω			
R18	560Ω			
R19	5, 65Ω Cold			#6B563621
R20	75Ω Cold			#17C40259A01
R21	.3Ω			Note 3
R22	.3Ω			Note 3
R23	120Ω			
R24	47K			(33K)*

Note 1. Value may vary from 82K to 180K. Replace with original value.
Note 2. Value may vary from 1000Ω to 2200Ω. Replace with original value.
Note 3. Value will vary to .3Ω. Replace with original value.
* Alternate Value.
Note 4. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Ant.	24B40267A01 ①					① Part of M3
L2	Image Trap	24B40532A01 ②					② Not used in some versions.
L3	Ant.	24B40270A01 ①					
L4	RF Choke	24B40532A02 ②					
L5	RF	24B563217 ①					
L6	Osc.	24K564644 ①					
L7	Input IF	24D40074A01					
L8	Output IF	24D40075A01					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L9	1.1A	.4Ω	6MH	25C40107A01-D ①					① Alternate #25C40107A01

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	8.5	1	25C40105A01-B ①					① Alternate Part #25C40105A01

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	40Ω CT Tap ⓐ 6-8Ω CT	25C40106A01-B ①					① Alternate Part #25C40106A01

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	6"x 9"	PM	6-8Ω	1D40378A01*		* Used in Model 1TMS (Obtain Speaker for Model 1TMC from Ford Dealer)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	1st IF Amp. Bias	.005mfd, 560Ω, 33K, 47K, 120K	51B40185A01	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M1	1N139	48K134498		1N295	AVC
M2	1N139	48K134498		1N295	Detector

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Tuner	77D40244A01	(AT-310) Complete Model 1TMS
	Tuner	77D40299A01	(TA-325) Complete Model 1TMC
	Printed Board	84C40340A02	Less all Components, Consists of 8 Sections (Specify Letter Following Part Number)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Scale	34B40027A01	Model 1TMC
Dial Pointer	1B40398A01	
Pushbutton	38B40271A01	Model 1TMC
Pushbutton	38B40025A01	Model 1TMS
Knob	1B40255A01	Tuning, Volume, Model 1TMS
Knob	36B40375A01	Tone Dummy, Model 1TMS
Knob	1B40248A01	Wood Grain, Tuning, Volume, Model 1TMC
Knob	1B40248A02	Blue, Tuning, Volume, Model 1TMC
Knob	1B40248A03	Beige, Tuning, Volume, Model 1TMC
Knob	1B40248A04	Green, Tuning, Volume, Model 1TMC
Knob	1B40248A05	Red, Tuning, Volume, Model 1TMC
Knob	1B40248A06	Turquoise, Tuning, Volume, Model 1TMC
Knob	1B40248A07	Black, Tuning, Volume, Model 1TMC

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

PHOTOFACT® Folder

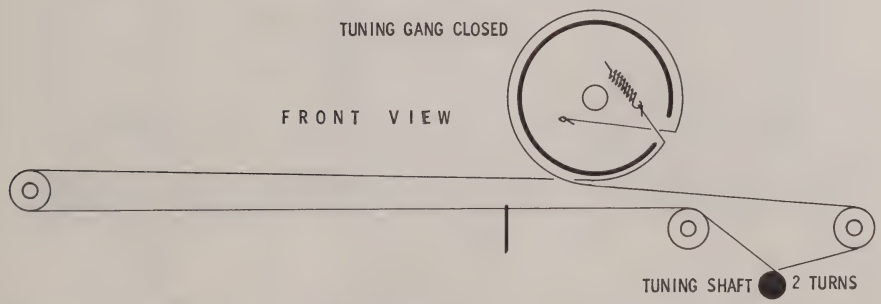
GRUNDIG MAJESTIC MODEL 87U

GRUNDIG MAJESTIC
MODEL 87U

GRUNDIG MAJESTIC
MODEL 87U

TRADE NAME	Grundig Majestic Model 87U
IMPORTER	Majestic International Sales, 743 N. LaSalle Street, Chicago 10, Illinois
TYPE SET	AC Operated 3 Tube FM-AM Receiver
POWER SUPPLY	110 - 120/220 Volts AC, 60 Cycles RATING 31 Watts, .36 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540 — 1600KC FREQ. MOD. 88 — 108MC

DIAL CORD STRINGING



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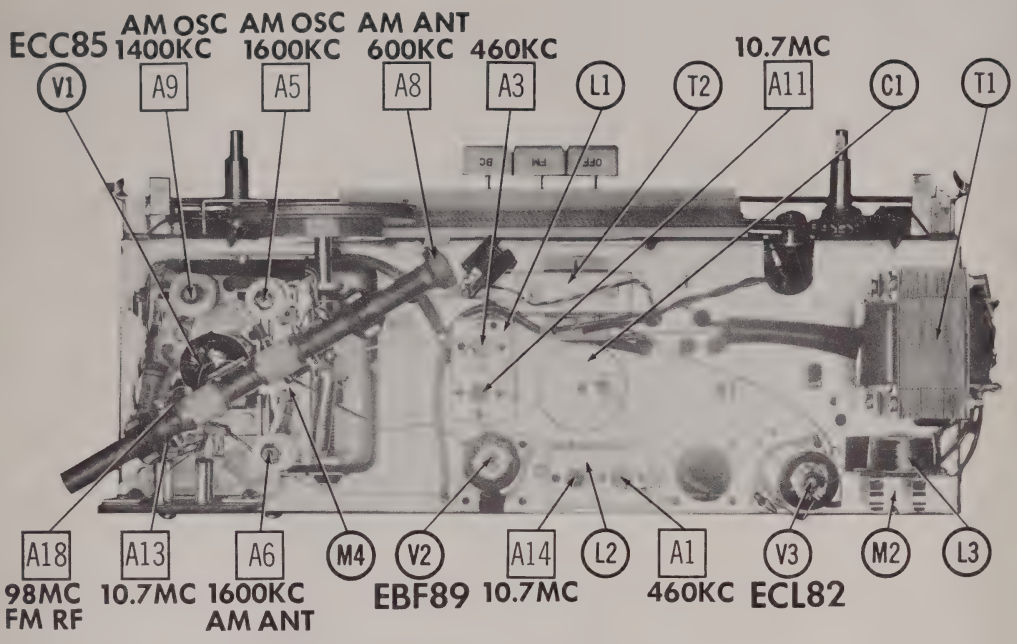
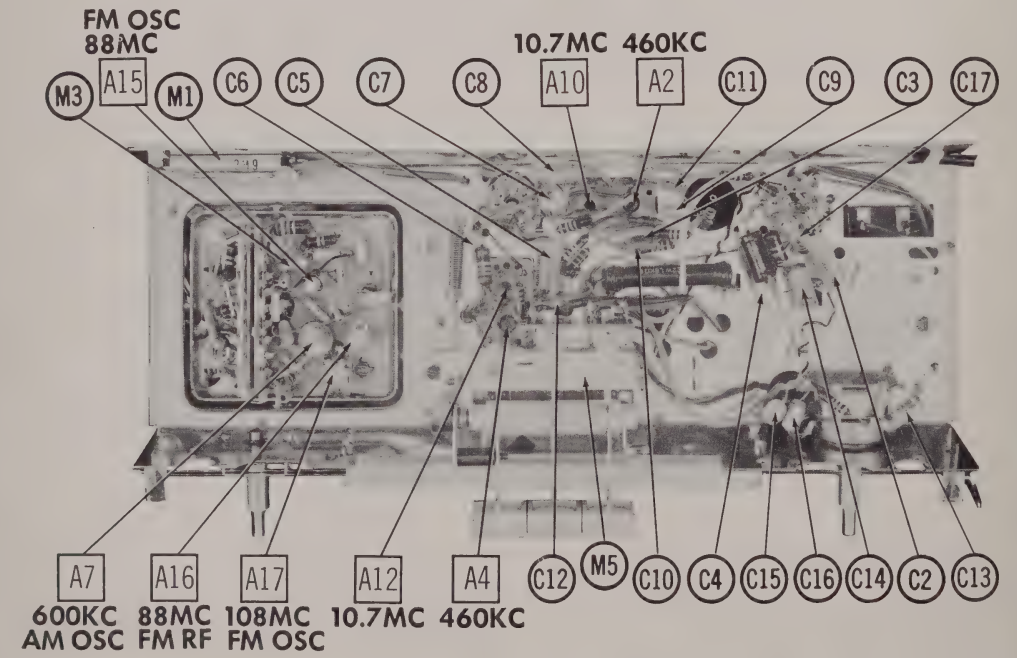
KK978

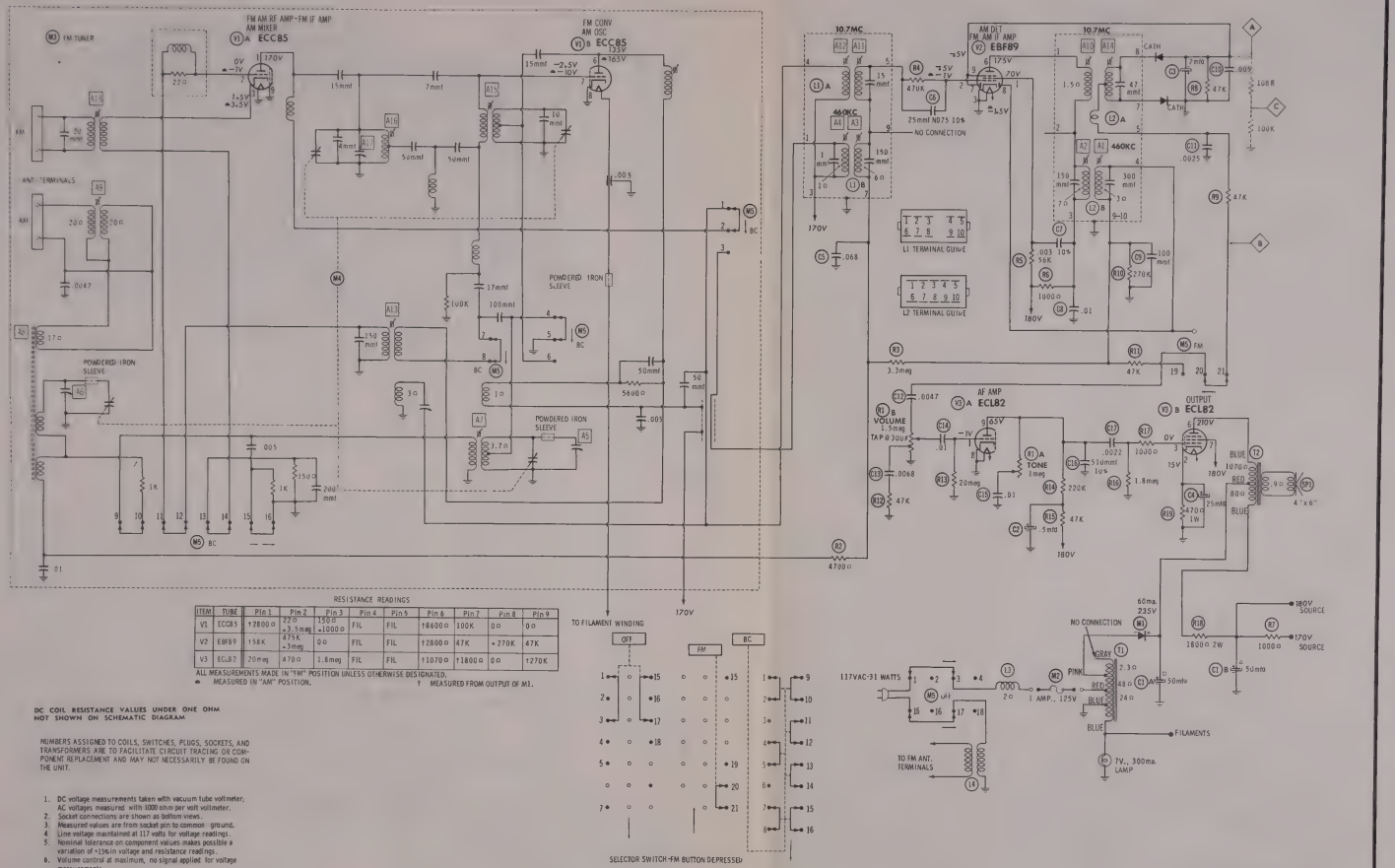
SET 570 FOLDER 12



CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW-ALIGN., CAPACITOR & MISC. IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	†2800Ω	22Ω •3.5meg	150Ω •1000Ω	FIL	FIL	†8600Ω	100K	0Ω	0Ω
V2	EBF89	156K	475K •3meg	0Ω	FIL	FIL	†2800Ω	47K	•270K	47K
V3	ECL82	20meg	470Ω	1.8meg	FIL	FIL	†1070Ω	†1800Ω	0Ω	†270K

ALL MEASUREMENTS MADE IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
• MEASURED IN "AM" POSITION. † MEASURED FROM OUTPUT OF M1.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of +15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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GRUNDIG MAJESTIC MODEL 87U

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication

Suggested Alignment Tools:

A1 thru A4, A9 thru A14, A18.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

A7, A15, A16, A17.....GENERAL CEMENT #9440

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	460KC (400~ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A5, A6,	"
3.	"	600KC	600KC	"	A7, A8	Adjust for maximum output. A8 is adjusted by moving antenna coil turns along ferrite core. Repeat steps 2 and 3.
4.	Across AM antenna terminals.	1400KC	1400KC	"	A9	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

Connect two matched 100K (±5%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (A). Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (B). Common to point (C).	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	Across FM antenna terminals.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. amp. to point (A) Low side to chassis.	A10, A11, A12, A13	Disconnect stabilizing capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C3.
6.	"	"	"	Vert. amp. to point (B). Low side to chassis.	A14	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	88MC (Unmod.)	(FM) 88MC	DC probe to point (A). Common to chassis.	A15, A16	Adjust for maximum deflection.
8.	"	108MC	108MC	"	A17	"
9.	"	98MC	98MC	"	A18	"

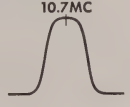
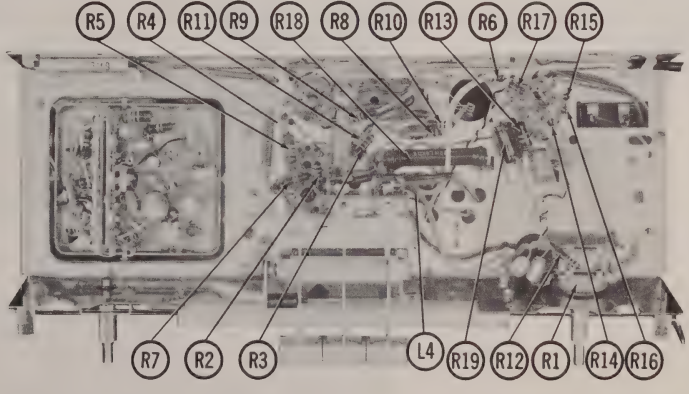


FIG. 1

FIG. 2



CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V1	RF Amp. -FM Conv. - FM IF Amp. -AM Mixer- AM Osc.	ECC85
V2	FM-AM IF Amp. -AM Det.	EBF89
V3	AF Amp. -Output	ECL82

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	Grundig Majestic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	■50	350		AFH1-41	A0390	XC1-5	FP137	TMS-1630	TVL-1622
B	▲50	350		PRSI680	BR5035	QT1-16	TC79	TD-50-450	TVA-1713
C2	.5	350		PRSI700	BR145	QT1-1	GEM-405		TVA-1700
C3	2	70		PRSI705	NLW2-100	MT1-2	TT150X2	MLV2-100	TE-1401
C4	25	30		PTT95	NLW25-50	MT1-12	TC36	MLV25-50	TVA-1306

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.068 250V		P488N-068		CUB4S68	4DP-3-683 *	GEM-4168	4TM-S68
C6	25 N075 10%							
C7	.003 10%				1R5D3	CCD-302	JL-233	10TS-D30
C8	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C9	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C10	.005		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C11	.0025		SI 2500	D6-252	BYA10D25	CCD-252	GP225	5HK-D25
C12	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C13	.0068 500V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C14	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C15	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C16	510 10%			DD-511	5R5T1	CCD-501	GP350	10TS-T50
C17	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	Grundig Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	1meg					
B	Volume	1.3meg 300K Tap					

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	4700Ω			
R3	3.3meg			
R4	470K			
R5	56K			
R6	1000Ω			
R7	1000Ω			
R8	47K			
R9	47K			
R10	270K			

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R11	47K			
R12	47K			
R13	20meg			
R14	220K			
R15	47K			
R16	1.8meg			
R17	1000Ω			
R18	1800Ω 2W			
R19	470Ω 1W			

COILS (RF-IF)

ITEM No.	USE	Grundig Majestic PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	2nd FM IF	7207-321					
B	1st AM IF						
L2A	Ratio Detector	7207-322					
B	2nd AM IF						
L3	Line Choke	0223-002					
L4	FM Line Ant.	9238-014					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	220V, Tap@117V@.36A, Tap@195V@.06A DC, Tap@6.3V@1.8A	9060-014					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	10K Tap@ 6%	2-3Ω	9038-019					

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	Grundig Majestic PART No.	QUAM PART No.	NOTES
SP1	4"x 6"	PM	2-3Ω		46A07	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	Grundig Majestic PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.060A	E250C85 *	1N1763 †	F6 †	* Selenium

FUSES

ITEM No.	TYPE	RATING	Grundig Majestic PART No. FUSE	Grundig Majestic PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2		1A 125V					AGC 1*	HKP *

* Use holder specified.

MISCELLANEOUS

ITEM No.	PART NAME	Grundig Majestic PART No.	NOTES
M3	FM Tuner		Complete
M4	Tuning Cap.		AM, 2 Gang
M5	Switch		Function Selector (Pushbutton Type)

WIRING DATA

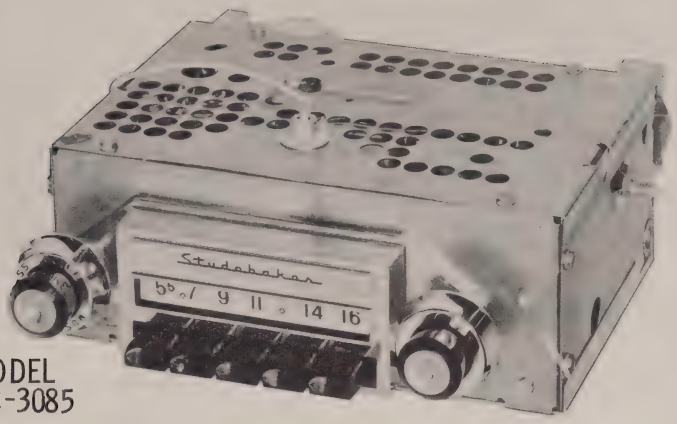
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

**STUDEBAKER MODELS
AC-3085, AC-3087**

STUDEBAKER MODELS
AC-3085, AC-3087



MODEL
AC-3085

STUDEBAKER MODELS
AC-3085, AC-3087

TRADE NAME	Studebaker Models AC-3085, AC-3087 (For 1961 Studebakers)
MANUFACTURER	Delco Radio Div., General Motors Corp., Kokomo, Indiana
TYPE SET	Battery Operated 4 Tube - 1 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 2.1 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A5, A9, A10... GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

A6, A7, A8..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
2.	High side thru 82mmf antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	"
3.	"	600KC	600KC Signal.	"	A9, A10	"
4.	"	1615KC	High end stop.	"	A7, A8	"
5.	"	1100KC	1100KC Signal.	"		Adjust pointer adjustment until pointer coincides with 1100 on dial.
6.	With radio installed in car and antenna fully extended, tune in a weak station and adjust A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull pushbutton out, then press in firmly.
2. Repeat for remaining pushbuttons.

SET 570 FOLDER 13

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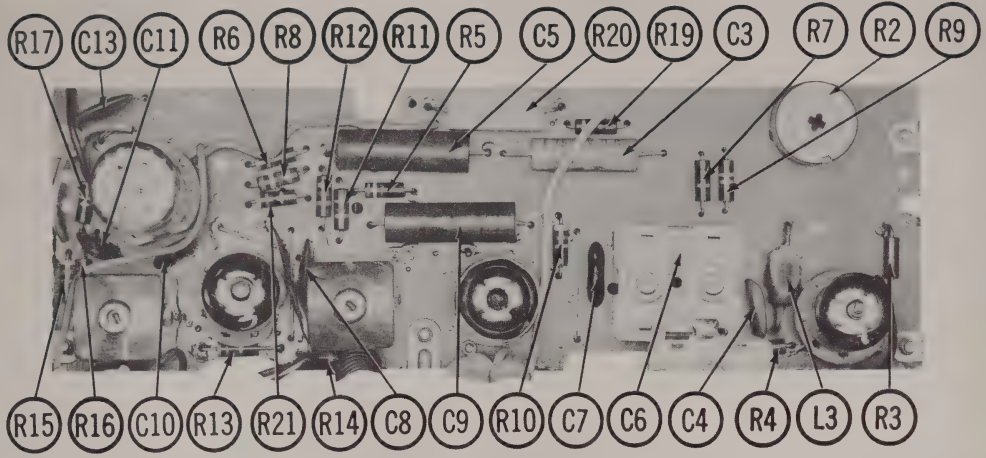
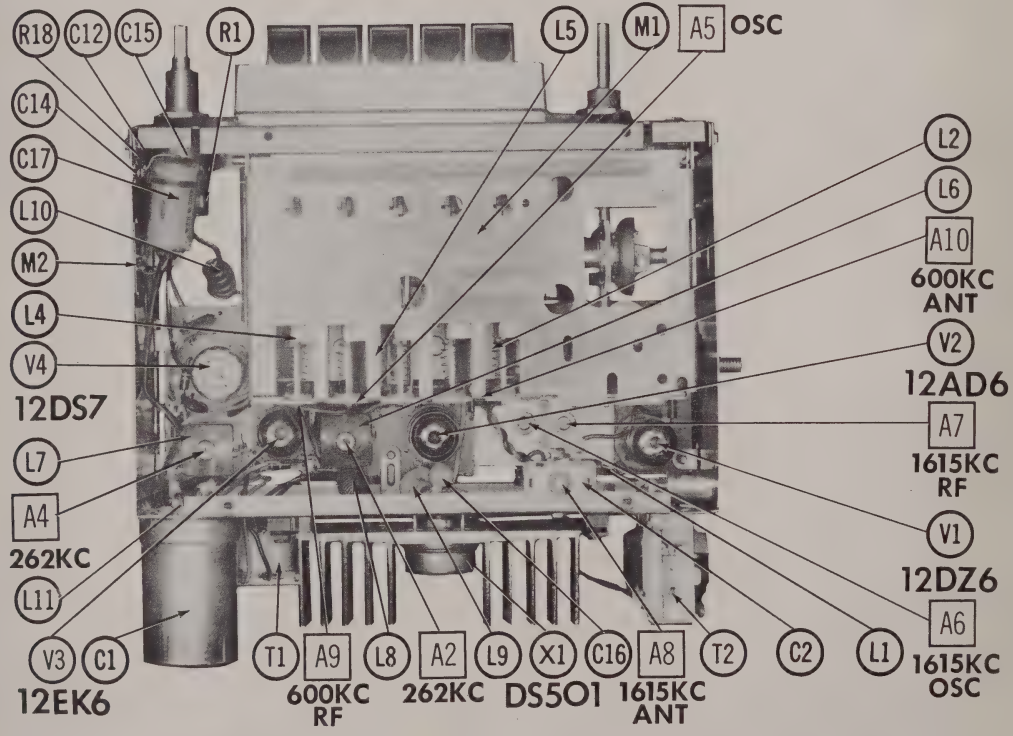
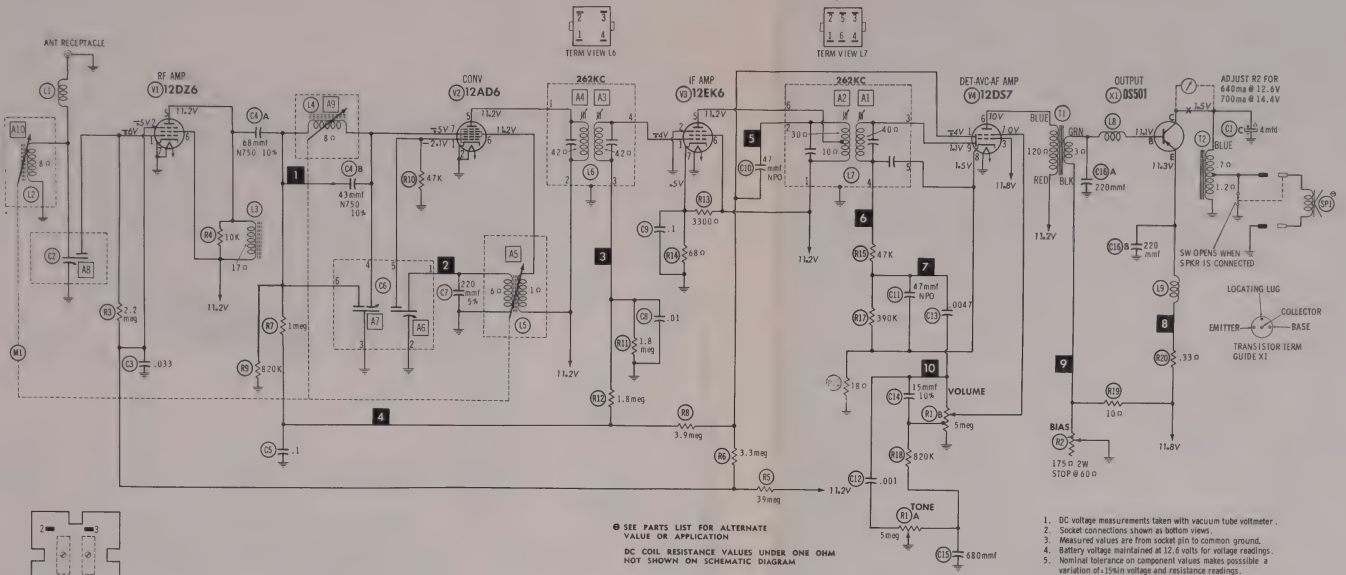
KD971



PRINTED BOARD-TOP VIEW



CHASSIS-TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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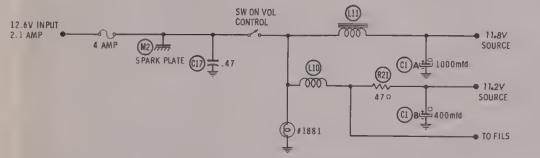
❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

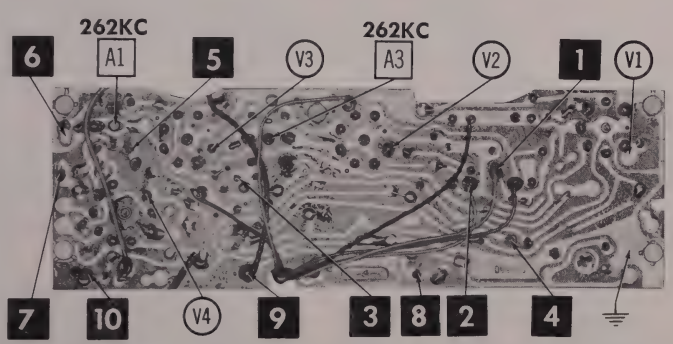
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	10meg	7.8meg	FIL	FIL	75Ω	50Ω	0Ω		
V2	12AD6	47K	0Ω	FIL	FIL	90Ω	50Ω	900K		
V3	12EK6	1.2meg	0Ω	FIL	FIL	60Ω	50Ω	68Ω		
V4	12DS7	4.5meg	TP	3Ω	FIL	FIL	330Ω	0Ω	18Ω	437K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.



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PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

STUDEBAKER MODELS AC-3085, AC-3087

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V3	IF Amplifier	12EK6
V2	Converter	12AD6	V4	Det.-AVC-AF Amp.	12DS7

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	DS501	Output		2N176	PNP Note 1

Note 1. When replacing, apply silicone grease between transistor and heat sink. Tighten mounting screw securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▲1000	16	7275315	AFH3-54-40			WP300.89		TVLS-3021.5*
B	■400	16							
C	▲4	11.5AC							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2		#7275275						
C3	.033 75V		P288N-033	DD-303	DPMS4S33	IDP-2-333	GEM-4133	4PS-S33
C4A	68 N750 10%		N750-DI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	43 N750 10%		N750-DI 39	TCN-43	C10Q43U	CCTN-390	CN7-439	10TCU-Q39
C5	.1 75V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C6		#7273693						
C7	220 5%		1469-00022	TCZ-220	22R5T22	CM-19B-221J	CNO-322	MS-322
C8	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	.1 75V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	47 NPO		NPO-DI 47	TCZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C11	47 NPO		NPO-DI 47	TCZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C12	.001		BPD-001	DD-103	BYA10D1	CCD-102	B-210	5HK-D10
C13	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C14	15 10%		1469-000015	TCZ-15	22R5Q15	CM-19B-150K	CNO-415	MS-415
C15	680		DI-680	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C16A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C17	.47 100V		P288N-47		CUB2P47	IDP-4-474	GEM-2047	2TM-D47

Delco Part Number.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1A	Tone	5meg	7278128				
B	Volume, with Switch (Off-On)	5meg					■ UE4242-S
R2	Bias	175Ω(2W) (60Ω Stop)	1221422①				

■ "STA-LOC" Equivalent: FH56L, RU56T26, OS1187, IS1687, US41
① Temperature Compensated.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R3	2.2meg			
R4	10K			
R5	39meg			
R6	3.3meg			
R7	1meg			
R8	3.9meg			
R9	820K			
R10	47K			
R11	1.8meg			
R12	1.8meg			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R13	3300Ω			
R14	68Ω			
R15	47K			
R16	18Ω			
R17	390K			
R18	820K			
R19	10Ω			
R20	.33Ω			Pt. #7271375
R21	47Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(6.5uh)	7255738	BC-565	4610	RTC-8520	T859	
L2	Ant.	1221138					
L3	RF Choke(1.8MH)	7269684	BC-514	4664	RTC-8533	T875	
L4	RF	1221138					
L5	Osc.	1221151					
L6	Input IF	1221257	BC-344	13-PH1	RTC-8644	T655	
L7	Output IF	1221253	BC-424				
L8	RF Choke(1.4uh)	7241708					
L9	RF Choke(1.4uh)	7241708					
L10	Hash Choke(1.4uh)	7241708					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L11	.750A	.7Ω	.011 HY	7274342		TC-2			

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6.8	1	1221590		TA-48			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10Ω Tap@3-4Ω	1221428		TA-50			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4"x 10"	PM	3-4Ω	7278208 *	410A2	* Used in Model AC-3085
	4"x 8"	PM	3-4Ω	7275979 ‡	48A2	‡ Used in Model AC-3087

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		Pushbutton Type (Series P2)
M2	Spark Plate	7271564	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	7272127	
Pushbutton	7276507	5 Required
Knob	7267414	Tuning, Volume
Knob	7278228	Tone
Knob	569555	Dummy

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

PHOTOFACT® Folder with CIRCUITRACE®

**SYMPHONIC
MODEL 1760**

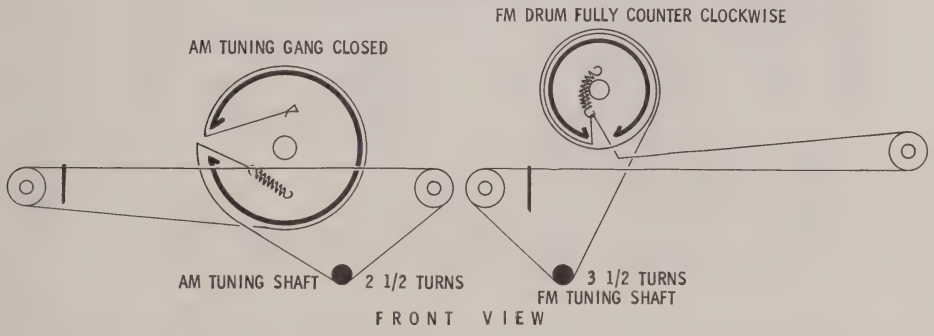
SYMPHONIC
MODEL 1760

SYMPHONIC
MODEL 1760

TRADE NAME	Symphonic Model 1760
MANUFACTURER	Symphonic Radio & Electronics Corp., 235 Jersey Ave., New Brunswick, New Jersey
TYPE SET	AC Operated 8 Tube FM-AM Receiver with Stereo Amplifier and 4 Speed Automatic Record Changer
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 82 Watts, .78 Amp. @117 Volts AC (Less Motor)
TUNING RANGE — BROADCAST	540-1600KC FREQ. MOD. 88 — 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE TELEFUNKEN TW560 — PHOTOFACT SET 371 FOLDER 12 OR RECORD CHANGER MANUAL RC-10

DIAL CORD STRINGING



FRONT VIEW

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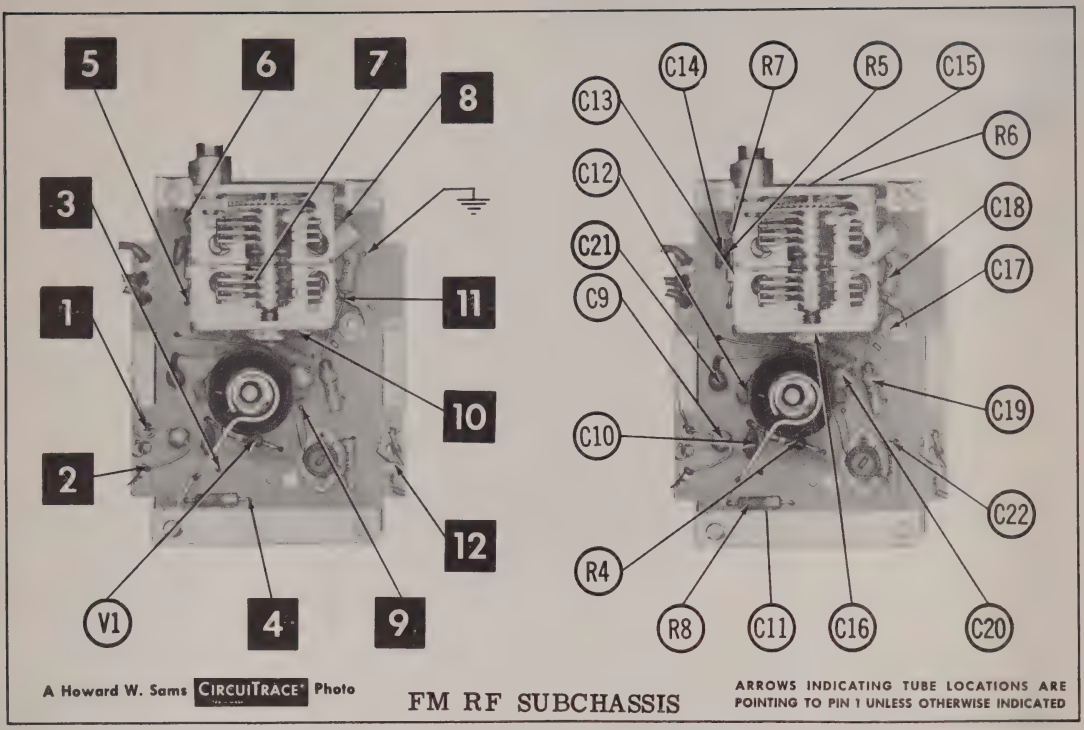
KN975

SET 570 FOLDER 14



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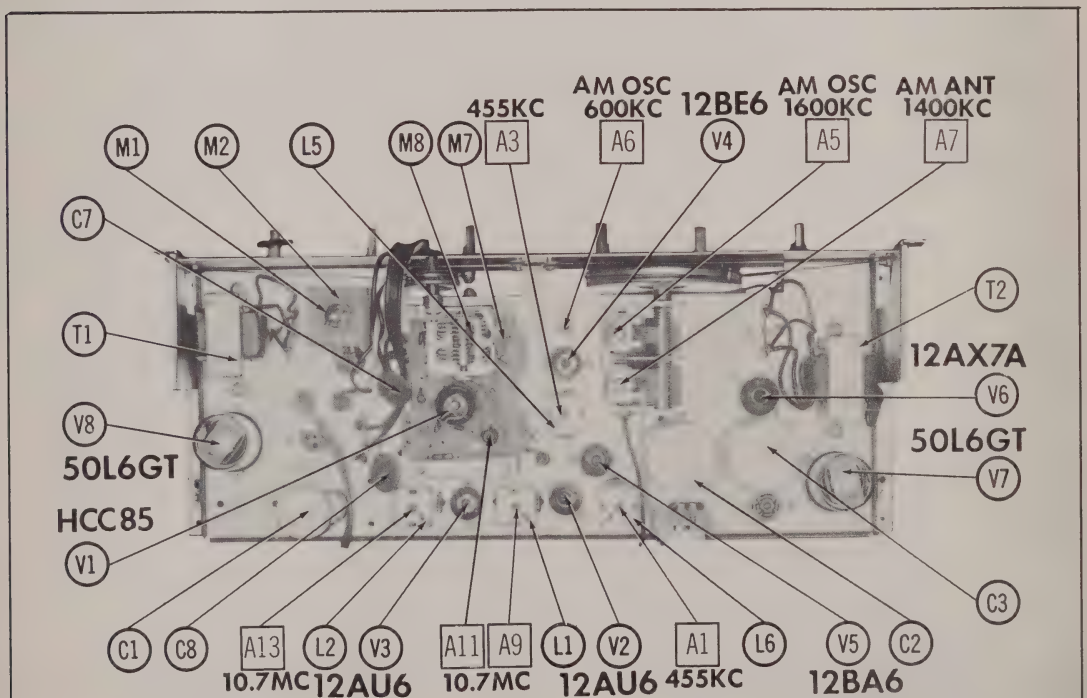
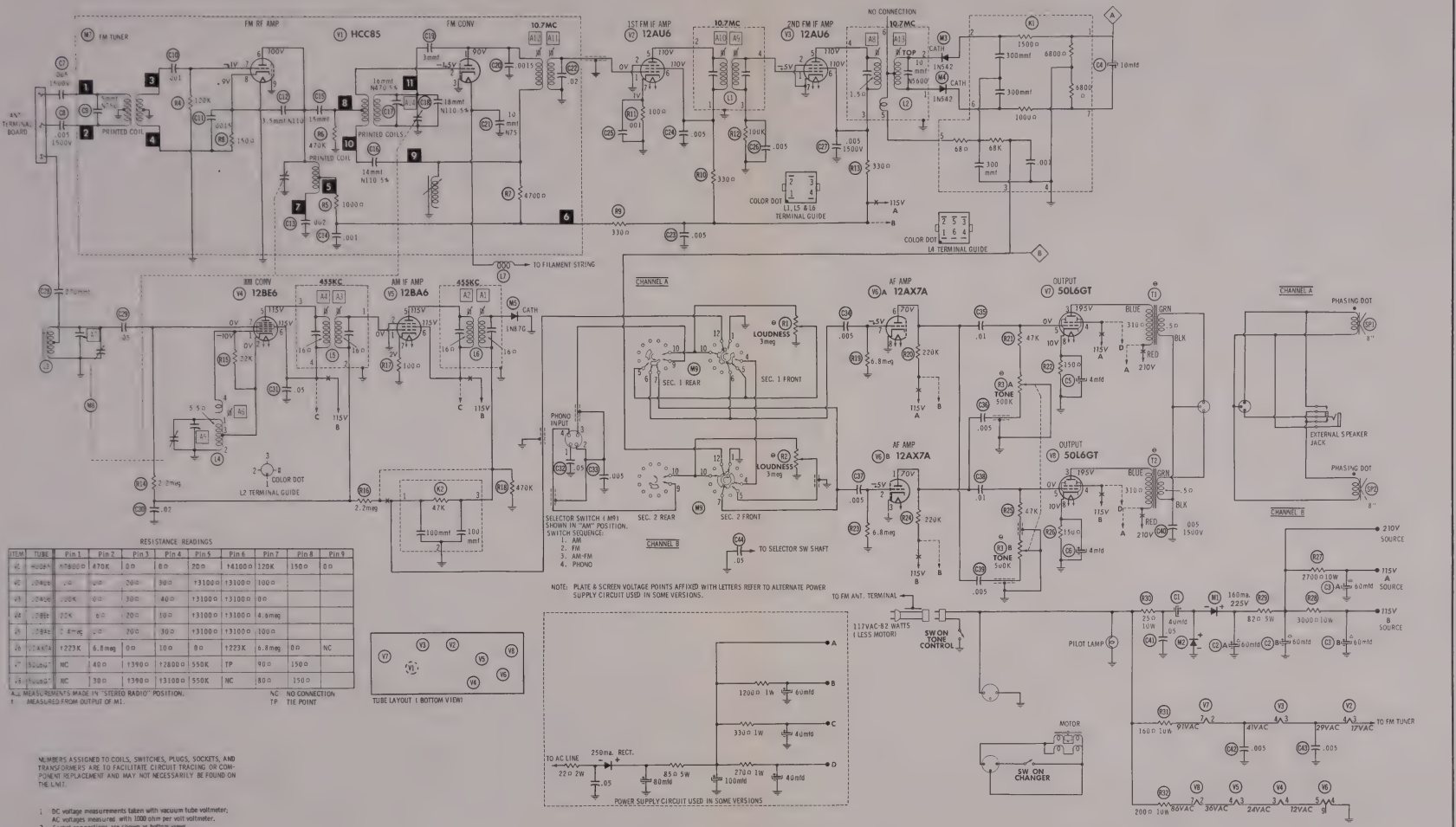
FM RF SUBCHASSIS

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



CHASSIS-TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V2	12BE6	†18000Ω	470K	0Ω	0Ω	20Ω	†4100Ω	120K	150Ω	0Ω
V3	12AU6	0Ω	0Ω	20Ω	30Ω	†3100Ω	†3100Ω	100Ω		
V4	12BE6	100K	0Ω	30Ω	40Ω	†3100Ω	†3100Ω	0Ω		
V5	12BA6	22K	0Ω	20Ω	10Ω	†3100Ω	†3100Ω	4.4meg		
V6	12AX7A	0.4meg	0Ω	20Ω	30Ω	†3100Ω	†3100Ω	100Ω		
V7	50L6GT	†223K	6.8meg	0Ω	10Ω	0Ω	†223K	6.8meg	0Ω	NC
V8	50L6GT	NC	40Ω	†390Ω	†2800Ω	550K	TP	90Ω	150Ω	
V9	5U4GB	NC	30Ω	†390Ω	†3100Ω	550K	NC	80Ω	150Ω	

A. MEASUREMENTS MADE IN "STEREO RADIO" POSITION.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
TP TIE POINT

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

SYMPHONIC MODEL 1760

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:

A1 thru A4, A8, A9, A10, A13.... GENERAL CEMENT #5097, 8727
WALSCO #2515

A5, A7, A14..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

A11, A12..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter.	455KC (400~ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru .001mfd to AM antenna terminal. Low side to chassis.	1600KC	1600KC	"	A5	"
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side to ungrounded tube shield over FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11 A12	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side to ungrounded tube shield over FM Converter. Low side to chassis.	10.7MC (450KC Swp.	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor C4. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C4.
6.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	108MC	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A14	Adjust for maximum output.

FIG. 1

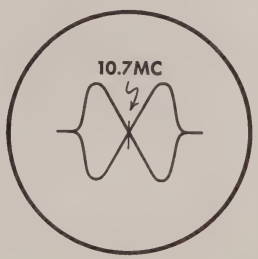
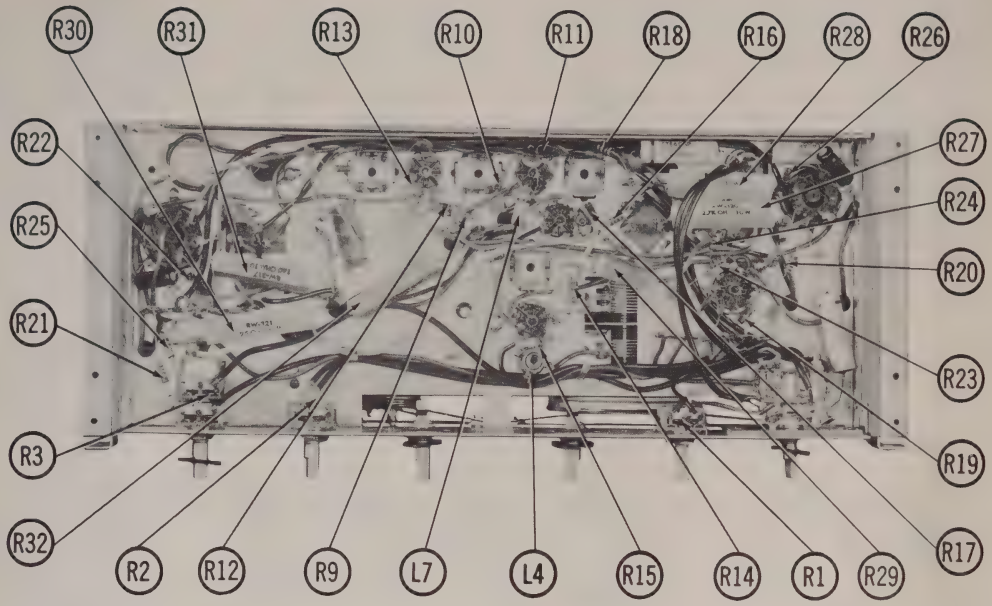
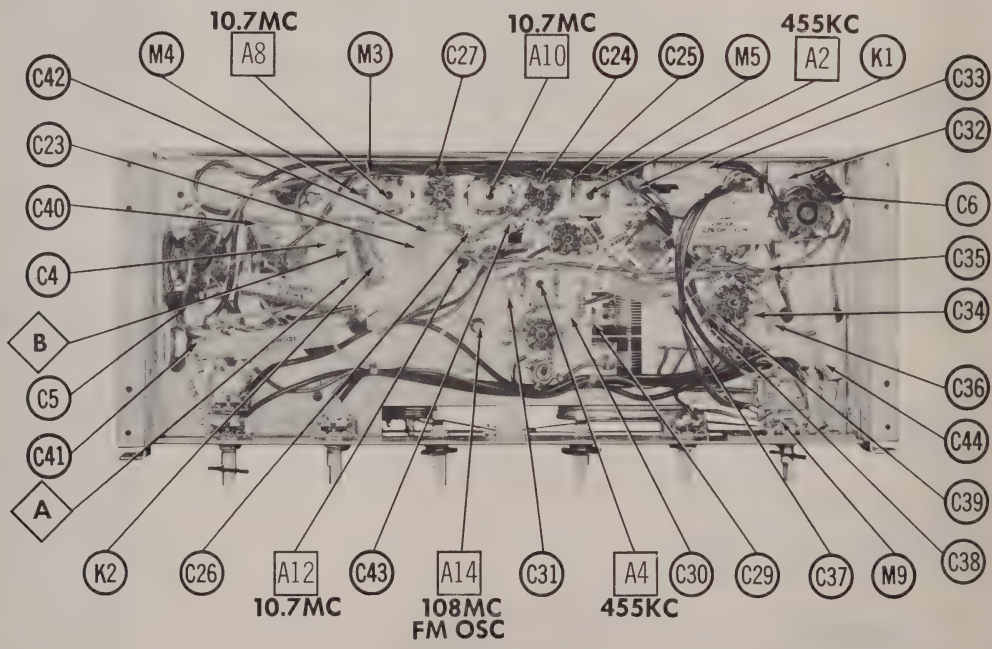


FIG. 2



CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.



CHASSIS BOTTOM VIEW-ALIGN., CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	HCC85	V6	Channel A AF Amp. - Channel B AF Amp.	12AX7A
V2	1st FM IF Amplifier	12AU6			
V3	2nd FM IF Amplifier	12AU6	V7	Channel A Output	50L6GT
V4	AM Converter	12BE6	V8	Channel B Output	50L6GT
V5	AM IF Amplifier	12BA6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYMPHONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	40	350	CE-152	PRS1670	BR4035	QT1-14	TC78	TD-40-350	TVA-1611
C2A	▲60	350	CE-151	AFH2-59	B0326	XC2-33	FP227.5	TMD-2415	TVL-2677
B	▲60	350							
C3A	▲60	350	CE-151	AFH2-59	B0326	XC2-33	FP227.5	TMD-2415	TVL-2677
B	▲60	350							
C4	10	50	CE-142	PTT92	NLW10-50	MT1-6	TC32	MLV10-50	TE-1304
C5	4	50	CE-148	PTT90	NLW5-50	MT1-3	TT50X4	MLV5-50	TE-1302.1
C6	4	50	CE-148	PTT90	NLW5-50	MT1-3	TT50X4	MLV5-50	TE-1302.1

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	.005 1500V		HVD-15-5000	DDI6-502	HVE16D5	3CCD-502	2HV-247	BL-D50
C8	.005 1500V		HVD-15-5000	DDI6-502	HVE16D5	3CCD-502	2HV-247	BL-D50
C9	5 N750		N750-SI 5.0	TCN-5	C10V5U	CCTN-050	CN7-550	10TCU-V50
C10	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C11	.0015		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C12	3.5 N110					*		
C13	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C14	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	15		NPO-SI 15	TCZ-15	C10Q15C	CCTO-	CNO-415	10TCC-Q15
C16	14 N110 5%					*		
C17								
C18	16 N470 5%					*		
C19	18 N110 5%					*		
C20	3		NPO-SI 3.0	TCZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C21	.0015		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C22	10 N75					*		
C23	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C24	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C27	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C28	.005 1500V		HVD-15-5000	DDI6-502	HVE16D5	3CCD-502	2HV-247	BL-D50
C29	270		DI-270	DD-271	L10T27	CCD-271	B-327	10TS-T27
C30	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C31	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C32	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C33	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C34	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C35	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C37	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C38	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C40	.005 1500V		HVD-15-5000	DDI6-502	HVE16D5	3CCD-502	2HV-247	BL-D50
C41	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C42	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C43	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C44	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			SYMPHONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Loudness, Channel A	3meg	VC-335 ①	B-85 or (AB-85, AK-19)	A47-3meg-Z/ FS-3	Q13-140, or (BU1, CF28, SS1, DC1) †	U57
R2	Loudness, Channel B	3meg	VC-335 ①	B-85, or (AB-85, AK-19)	A47-3meg-Z/ FS-3	Q13-140, or (BU1, CF28, SS1, DC1) †	U57
R3A B	Tone, Channel B Tone, Channel A with Switch(Off-On)	500K	VC-336 ②	B-60, SR-60, KR1, or (AB-60, SR-60 AK-7, KR-1)	AD47-500K-Z/ FS-3, SWE-12		FA55A, RU55A, CS3500, U541

① Some versions may use Part #VC-334.
② Some versions may use Part #VC-333.
† "SNAPTROL"

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	120K			
R5	1000Ω			
R6	470K			
R7	4700Ω			
R8	150Ω			
R9	330Ω			
R10	330Ω			
R11	100Ω			
R12	100K			
R13	330Ω			
R14	2.2meg			
R15	22K			
R16	2.2meg			
R17	100Ω			
R18	470K			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R19	6.8meg			
R20	220K			
R21	47K			
R22	150Ω			
R23	6.8meg			
R24	220K			
R25	47K			
R26	150Ω			
R27	2700Ω 10W	PW10-2700	10W-SQ-2700	
R28	3000Ω 10W	PW10-3000	10W-SQ-3000	
R29	82Ω 5W	PW5-82	5W-SQ-82	
R30	25Ω 10W	PW10-25	10W-SQ-25	
R31	160Ω 10W	PW10-160	10W-SQ-160	
R32	200Ω 10W	PW10-200	10W-SQ-200	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYMPHONIC PART No.	REPLACEMENT DATA	
K1	Ratio Detector Network	300mmf, 300mmf, 300mmf, .001mfd, 68Ω, 1000Ω, 1500Ω, 6800Ω, 6800Ω, 68K	PC-342	Aerovox Centralab Sprague	PA-694 PC-342 C-12
K2	Diode RF Filter	100mmf, 100mmf, 47K	PC-50	Aerovox Centralab Sprague	PA-97 PC-50 D-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SYMPHONIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	2nd FM IF	LF-110	FM-254	1463	RTC-8599	T633	① IRC Part #CLA
L2	Ratio Detector	LF-109	FM-255	1465	RTC-8600	T635	
L3	Loopstick	AL-105	BC-419	705-A		T532	
L4	AM Osc.	LO-110	BC-393	69-OSC	RTC-8646	T504	
L5	1st AM IF	LF-104	BC-352	12-C1	RTC-8632	T607	
L6	2nd AM IF	LF-104	BC-353	12-C2	RTC-8633	T608	
L7	Fil. Choke (luh)	LB-102 ①	BC-561	4602	RTC-8515	T855	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SYMPHONIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5100Ω	3-4Ω	TR-202 ①	A-3019②	A-8092②	26S49②	S-5Z②	① Alternate Part #TR-197 .
T2	5100Ω	3-4Ω	TR-202 ①	A-3019②	A-8092②	26S49②	S-5Z②	② Drill New Mounting Hole(s).

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYMPHONIC PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	SP-804	8A31PAZ3.4	
SP2	8"	PM	3-4Ω	SP-804	8A31PAZ3.4	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT (Measured)	SYMPHONIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	
M1	.160A	SR-108 †	1N1763 ǂ	250 †	† Selenium
M2	.160A	SR-108 †	1N1763 ǂ	250 †	ǂ Silicon

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SYMPHONIC PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M3	1N542	CR-1N542		1N542	Ratio Detector
M4	1N542	CR-1N542		1N542	(Matched Pair)
M5	1N87G	CR-1N87G		1N87G	AM Detector

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	SYMPHONIC PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M6	ST-20	ST-40(LP)* (LP)	80-TS-TB	N8-7*	96T	2616*	12TLA-S	N-12TLA-3*	
		ST-40(ST)* (78RPM)		N8-3*					

MISCELLANEOUS

ITEM No.	PART NAME	SYMPHONIC PART No.	NOTES
M7	FM Tuner	T-127	
M8	Tuning Cap.	CV-109	2 Gang (Ant. 21—484mmf, Osc. 8—160mmf)
M9	Switch	SW-136	Function Selector (Rotary Wafer Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	DL-116	2 Used

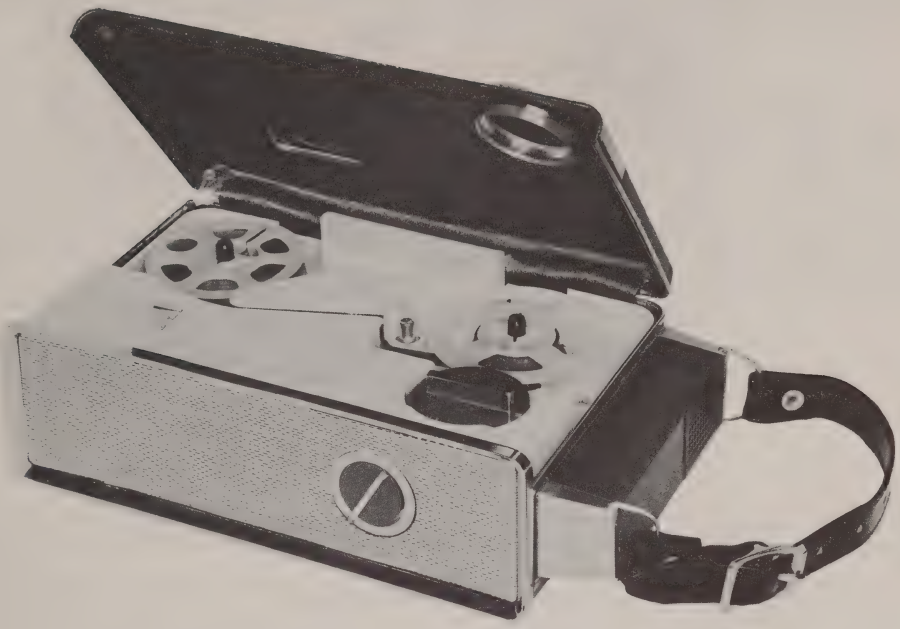
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE*

TELECTRO
MODEL MR511

TELECTRO
MODEL MR511



TELECTRO
MODEL MR511

GENERAL INFORMATION

The Telectro Model MR511 is a battery-operated, two-speed, tape recorder. This unit is designed to record and play back two tracks of material on standard width tape. The tape speeds are 1 7/8 and 3 3/4 ips.

Recordings can be made from radio, phono, AM-FM tuner, or TV receiver, as well as a microphone. Using both tracks of a 3-inch reel of tape, the recording times are as follows:

Reel Size	1 7/8 ips	3 3/4 ips
3"	1 hour	1/2 hour

The power supply is self-contained, consisting of seven 1 1/2 volt penlite batteries.

Manufactured By:

Telectrosonic Corporation
35-18 37th Street,
Long Island City 1, New York

SET 570 FOLDER 15

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1962 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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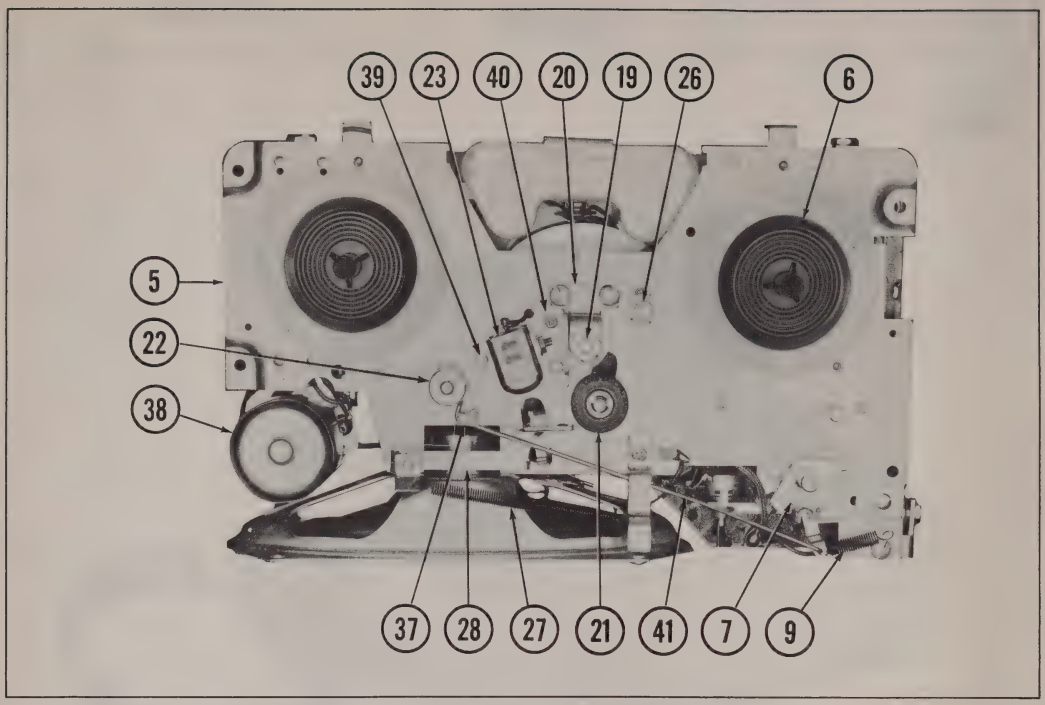


FIG.1 TOP VIEW OF MECHANISM

PREPARING FOR OPERATION

Open the lid and thread the tape (See "Threading the Tape"). When the Function control is turned to Rewind, Play, or Record position, power is automatically applied to the recorder.

FUNCTION OF CONTROLS

Function Control

The Function control is a four-position control. The Rewind position winds the tape from the take-up reel to the supply reel at a fast rate. The Off position releases the pressure roller and pressure pads and removes the power from the amplifier and motor. The Play position applies the pressure pads to the head, applies power to the amplifier and motor, and sets the tape in motion. Record position sets the recorder up for recording. The Record lock button must be depressed at the same time the Function control is rotated to the Record position.

Volume Control

The Volume control determines the volume of the recorder during playback and also the recording level when making a recording.

Speed Change Control

When recording or playing back a tape at 3 3/4 ips, pull the Speed Selector control to the "up" position. With the Speed Selector control in the "down" position, the tape travels at 1 7/8 ips.

NOTE: Change the Speed Selector control with the Function control in the Stop position only.

Threading the Tape

1. Place a reel of tape on the left (supply) spindle and an empty reel on the right (take-up) spindle.

2. Unwind about 8 inches of tape and thread it through the tape slot, making sure the shiny side of the tape faces the front of the recorder.

3. Insert the free end of the tape into one of the slots in the hub of the take-up reel. Turn the take-up reel counterclockwise to take up the slack in the tape.

To Record from a Microphone

Insert the microphone jack into the microphone input. Thread the tape as described under "Threading the Tape". Push the Record lock button and turn the Function Selector to the Record Position. Set the Volume control between 2 and 3. Hold the microphone

6 to 8 inches away from your mouth. If the recording is distorted, decrease the volume setting during recording. If the recording is weak, increase the volume setting.

To Rewind the Tape

To rewind the tape, move the Function selector to the Rewind position. To stop the tape, return the Function selector to the Off position.

To Play a Recording

1. Follow instructions under "Threading the Tape".
2. Move the Function selector to the Play position.
3. Adjust the Volume control to the desired listening level.
4. To stop the tape transport, move the Function selector to the Off position.

Erasing Recorded Material

Any recording on a tape is automatically erased before a new recording is put on the tape when the unit is in Record position. To erase a tape without putting a new recording on it, follow the normal recording procedure but leave the Volume control setting at minimum.

Dual Track Recording

These recorders are designed to record and play back on one-half the tape width at a time. After the recording is completed, and all the tape is wound on the take-up reel, remove the reels from the recorder. Turn the reels over and place full reel on the supply spindle. Properly thread the tape and proceed with recording. After the second track has been recorded, the first track can be played back in the same manner.

To Edit and Splice Tape

NOTE: Since one track cannot be edited and spliced without affecting the other track, recordings to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions of the tape or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused sections can be spliced for re-use.
2. For best results, cut tape at a slight diagonal, join ends with splicing tape on the glossy side. Trim off any excess width.

DISASSEMBLY

To Remove the Recorder from the Case

1. Remove the Function control knob (1) and the Volume control knob.
2. Remove the rear escutcheon by pressing in on the front and lifting upward.
3. Remove 3 screws and lift the front escutcheon up off the recorder.
4. Lift the recorder from the case.
5. To reassemble, reverse the above procedure.

CLEANING

Pressure roller (21), Capstan shaft (11), Tape guide (41), and Record-Playback head (23) may accumulate tape oxide coating, worn off the tape as it passes these parts. This accumulation will cause poor performance and should be removed with a soft lint-free cloth dipped in alcohol.

LUBRICATION

Under normal use, this recorder needs no lubrication. When unit is disassembled, clean and lubricate all bearing surfaces with a good grade of oil. Lubricate the cams and levers with a non-hardening grease. Make sure no oil or grease gets on the rubber surface of the drive wheels.

ADJUSTMENT

Record-Playback Head

The Record-Playback head (23) has been properly aligned at the factory, and should not need adjustment unless it is replaced. The top edge of the Record-Playback head (23) must be set evenly with the top edge of the tape. Loosen nuts and adjust the height. Using an alignment tape, adjust head adjustment screw (40) until highest frequency response is obtained.

Flywheel Bearing Adjustment

To adjust flywheel, loosen nut and adjust adjustment screw (19) until a slight resistance is felt; back off screw 1/4 turn and tighten nut.

NOTE: Care must be taken when turning flywheel adjusting acrew (19) to prevent damage to flywheel bearing.

Brake Adjustment

To adjust brake (35) loosen screws and adjust brake arm until proper brake action is obtained. Braking should be smooth and immediate.

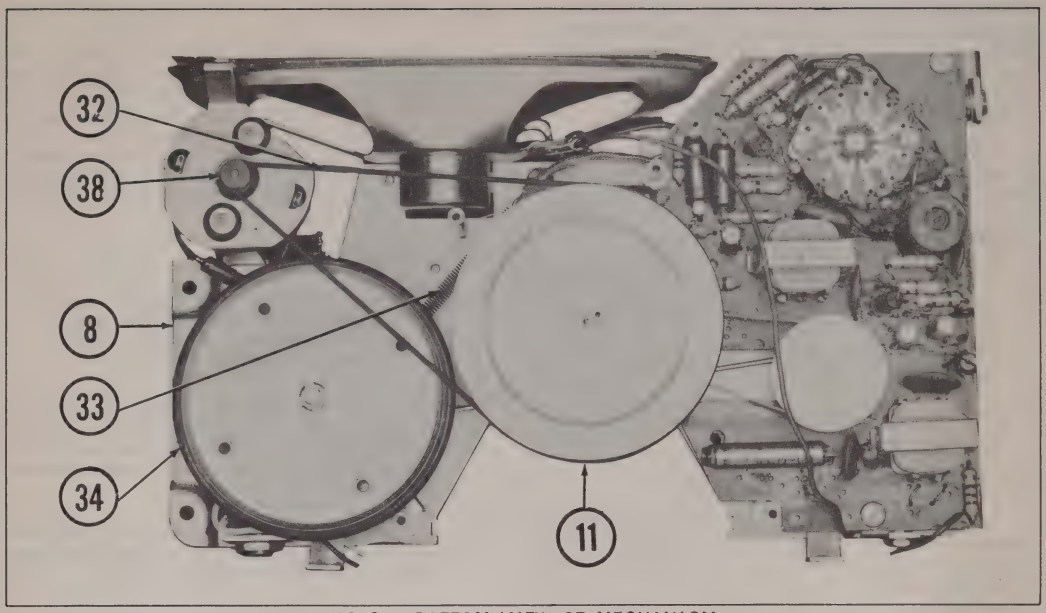


FIG.2 BOTTOM VIEW OF MECHANISM

TROUBLE CHART

NOTE: Before attempting any troubleshooting on this unit, check the batteries and replace them if they are weak. Weak batteries can cause many and varied troubles.

Symptom	Cause	Remedy
Recordings distorted.	1. Record-Playback head pressure pad (37) worn or dirty. 2. Record-Playback switch return spring (9) weak.	1. Replace pressure pad (37), or clean with soft cloth and alcohol. 2. Replace spring (9).
Wow.	1. Oil on pressure roller (21), capstan (11), or motor pulley. 2. Pressure roller (21) out of round. 3. Flywheel bearing (19) loose or damaged. 4. Pressure roller plate (17) out of line. 5. Take-up reel rubbing against speed selector. Play cam lever bent.	1. Clean these parts with a soft cloth and alcohol. 2. Replace pressure roller (21). 3. See "Flywheel Bearing Adjustment". Replace if necessary. 4. Replace pressure roller plate (17). 5. Bend Play cam lever until reel does not rub.
No Rewind.	1. Drive belt (32) loose or broken. 2. Take-up belt (12) loose or broken. 3. Oil or grease on driving surface.	1. Replace drive belt (32). 2. Replace take-up belt (12). 3. Clean all driving surfaces with a soft cloth and alcohol.
Reels do not turn in Record or Playback.	1. Defective motor. 2. Pressure roller plate spring (33) loose or broken. 3. Pressure pad bracket spring (27) loose or broken.	1. Replace motor (38). 2. Replace pressure roller plate spring (33). 3. Replace pressure pad bracket spring (27).
Does not Record or Erase.	1. Record interlock spring (3) bent.	1. Replace or straighten Record interlock spring (3).
Will not Erase.	1. Erase head link (41) loose or bent. 2. Erase head pressure pad (28) bracket bent.	1. Straighten or replace link. 2. Straighten or replace erase head pressure pad bracket (28).

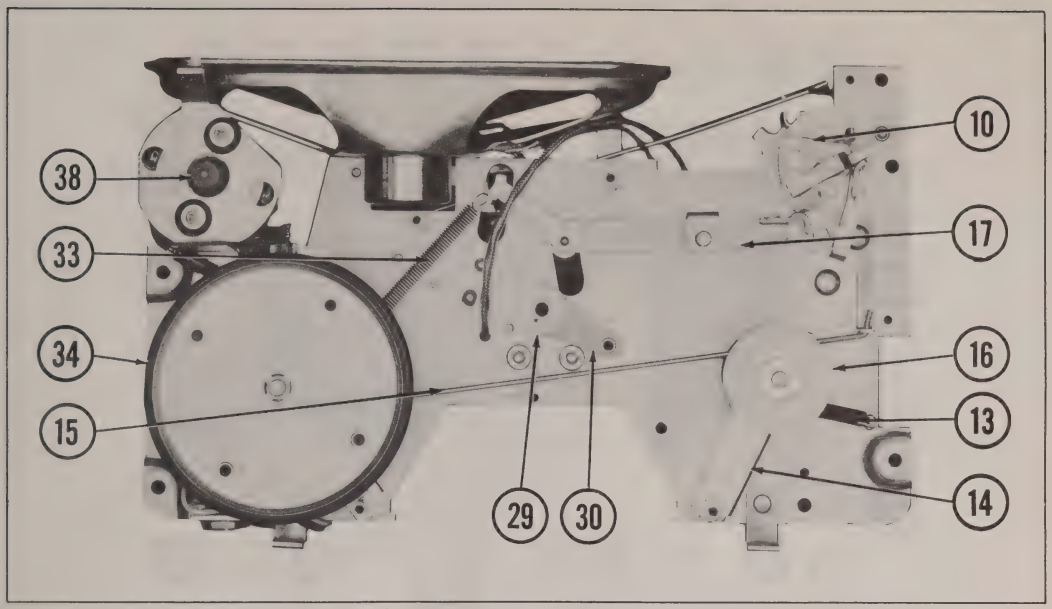


FIG.3 BOTTOM VIEW OF MECHANISM

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
Speed selector knob will not remain in position.	1. Speed selector spring broken or missing.	1. Replace speed selector spring.
Transport noisy when operating at 1 7/8 ips.	1. Speed selector shaft ass'y. (30) hitting flywheel (11).	1. Raise speed selector shaft ass'y. (30) by unscrewing selector knob (26) and placing washers between shaft and knob.

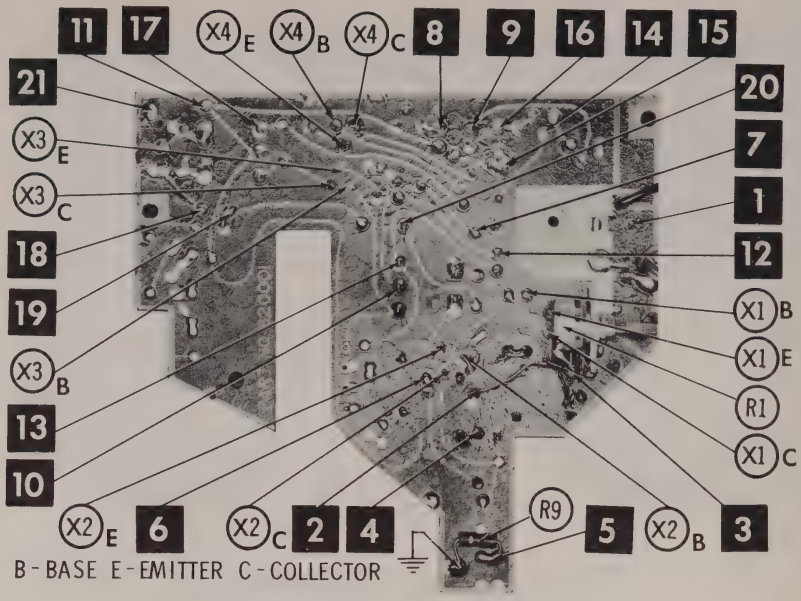
MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	TK-278	Function Control Knob
2	480009	Record Lock Button
3	960014	Record Lock Spring
4	100002	Rear Escutcheon
5	100003	Front Escutcheon
6	TS-3222	Reel Spindle
7	TC-2362	Star Indexing Cam
8	120003	Motor Board Ass'y.
9	879002	Record Switch Return Spring
10	120002	Function Cam Shaft Ass'y.
11	TA-1593	Flywheel Ass'y.
12 *	290001 *	* Take-up Belt
13	879003	Wind Arm Spring
14	960008	Wind Arm
15	360001	Rewind Link
16	TW-487	Take-up Wheel
17	120005	Pressure Roller Plate Ass'y.
18	120007	Bottom Support Plate Ass'y.
19	TB-2576	Adjustable Jewel Bearing
20	TH-645-2	Bearing Housing
21*	TR-2136*	*Pressure Roller

Ref. No.	Part No.	Description
22	120011	Erase Head Ass'y.
23	TH-661	Record-Playback Head
24	TB-2028	Record-Playback Head Mtg.Brkt.
25	960001	Speaker Bracket and Rod Guide
26	480008	Speed Selector Knob
27	879004	Lever-Pressure Pad Spring
28	120006	Pressure Pad Bracket Ass'y.
29	TA-1700	Capstan and Pin Sleeve Ass'y.
30	120013	Speed Selector Shaft Ass'y.
31	TG-512	Grommet
32*	TO-243 *	*Drive Belt
33	879004	Pressure Roller Plate Spring
34	120012	Rewind Wheel Ass'y.
35	960007	Brake Arm
36	TP-1423	Brake Arm Pad
37	TP-863	Pressure Pad
38	120009	Motor Ass'y.
39		Screw
40	TC-515	Tape Guide
41	TL-447	Erase Head Link

* Drive Belt-WALSCO Part No. 41-094
* Pressure Roller -WALSCO Part No. 41-104

* Take-up Belt - WALSCO Part No. 41-100



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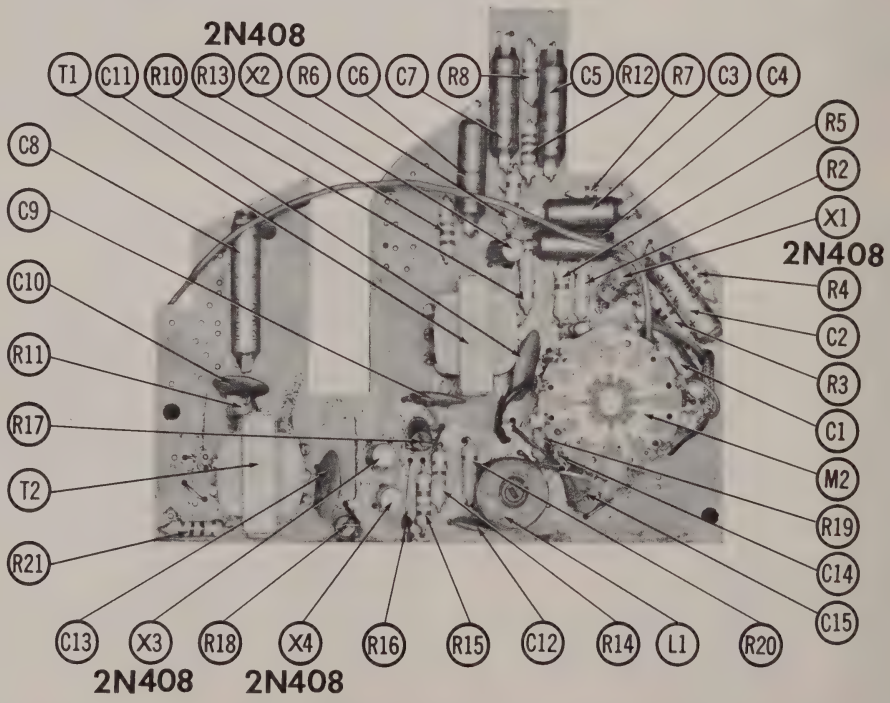
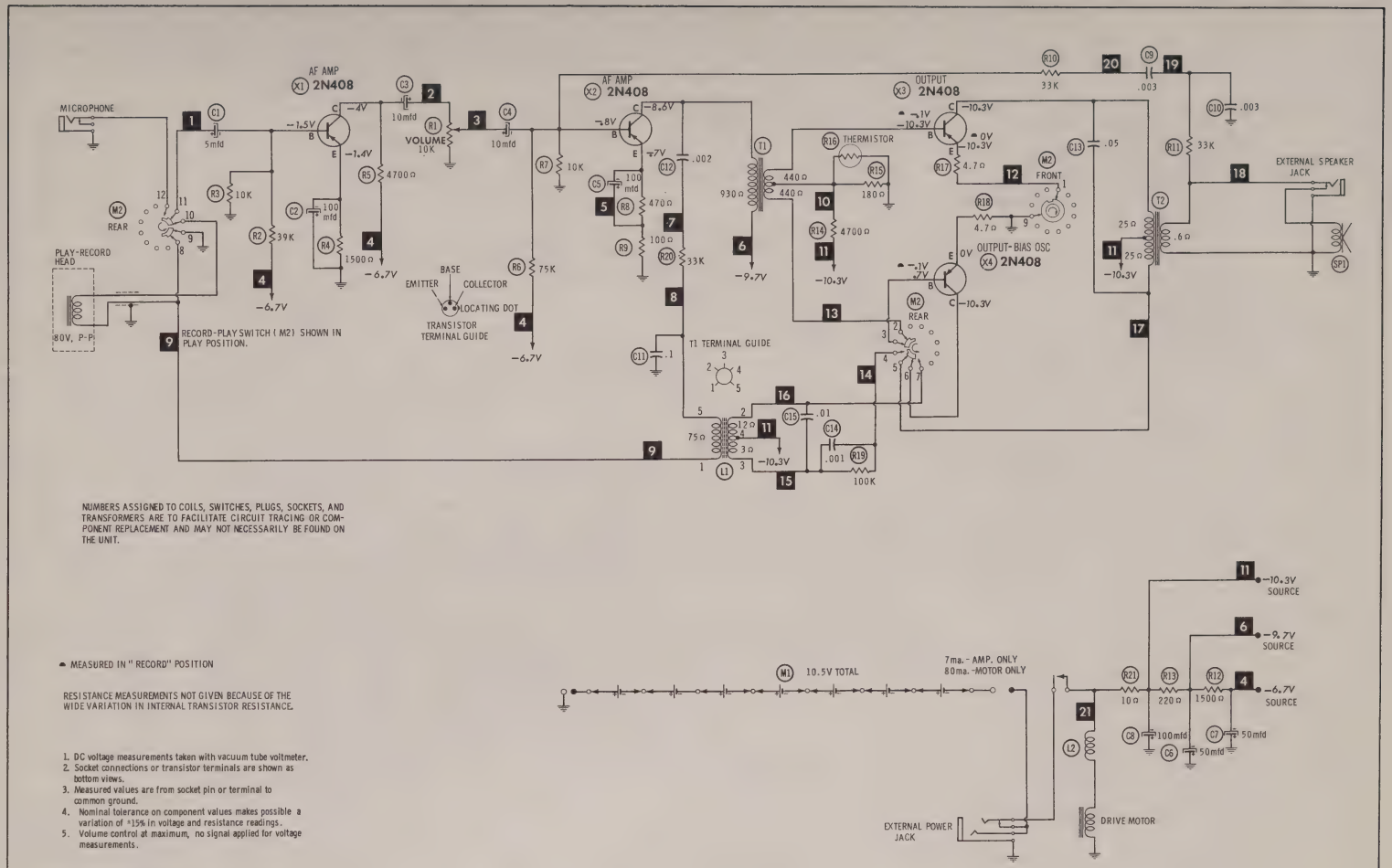
PRINTED BOARD



PRINTED BOARD-TOP VIEW



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⏜ MEASURED IN " RECORD" POSITION

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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TELECTRO
MODEL MR511

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ELECT. PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2N408	AF Amplifier	2N408	2N633	PNP
X2	2N408	AF Amplifier	2N408	2N633	PNP
X3	2N408	Output	2N408	2N633	PNP
X4	2N408	Output-Bias Osc.	2N408	2N633	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TELECTRO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	5	12	TC-2434	PTT51	NLW5-15	MT1-3	TT12X5	MLV5-12	TE-1127
C2	100	3	TC-2435	PTT13	NLW100-3	MT1-18	TT6X100	MLV100-3	TE-1059, 5
C3	10	12	TC-2436	PTT53	NLW10-15	MT1-5	TT12X10	MLV10-12	TE-1128
C4	10	12	TC-2436	PTT53	NLW10-15	MT1-5	TT12X10	MLV10-12	TE-1128
C5	100	3	TC-2438	PTT13	NLW100-3	MT1-18	TT6X100	MLV100-3	TE-1059, 5
C6	50	12	TC-2437	PTT59	NLW50-15	MT1-16	TT15X50	MLV50-12	TE-1133
C7	50	12	TC-2437	PTT59	NLW50-15	MT1-16	TT15X50	MLV50-12	TE-1133
C8	100	12	TC-2439	PTT60	NLW100-12	MT1-19	TT15X100	MLV100-12	TE-1135

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	.003		DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C10	.003		DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C11	.1 50V			DDA-104	H-05P1		TA-010	TG-P10
C12	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C13	.05		BPD-05	DD-503	H-0505		TA-150	5HK-S50
C14	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			TELECTRO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume	10K	TP-1483	JP2-103	4410K-W		MLC14A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	39K				R12	1500Ω			
R3	10K				R13	220Ω			
R4	1500Ω				R14	4700Ω			
R5	4700Ω				R15	180Ω			
R6	75K				R16	Thermistor			Pt. #TT-814
R7	10K				R17	4.7Ω			
R8	470Ω				R18	4.7Ω			
R9	100Ω				R19	100K			
R10	33K				R20	33K			
R11	33K				R21	10Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		TELECTRO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Osc.	TT-917					
L2	RF Choke(1.4uh)		BC-562	4604	RTC-8516	T856	

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TELECTRO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.8	1	TT-927					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TELECTRO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1000Ω CT	3-4Ω	TT-925					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TELECTRO PART No.	QUAM PART No.	
SP1	2 1/4" x 6 1/4"	PM	3-4Ω	TS-3503		

BATTERIES

ITEM No.	VOLTAGE	TELECTRO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1½V			930		1015		M-15R	7 Required

MISCELLANEOUS

ITEM No.	PART NAME	TELECTRO PART No.	NOTES
M2	Switch	TS-3223	Function Selector (Rotary Wafer)

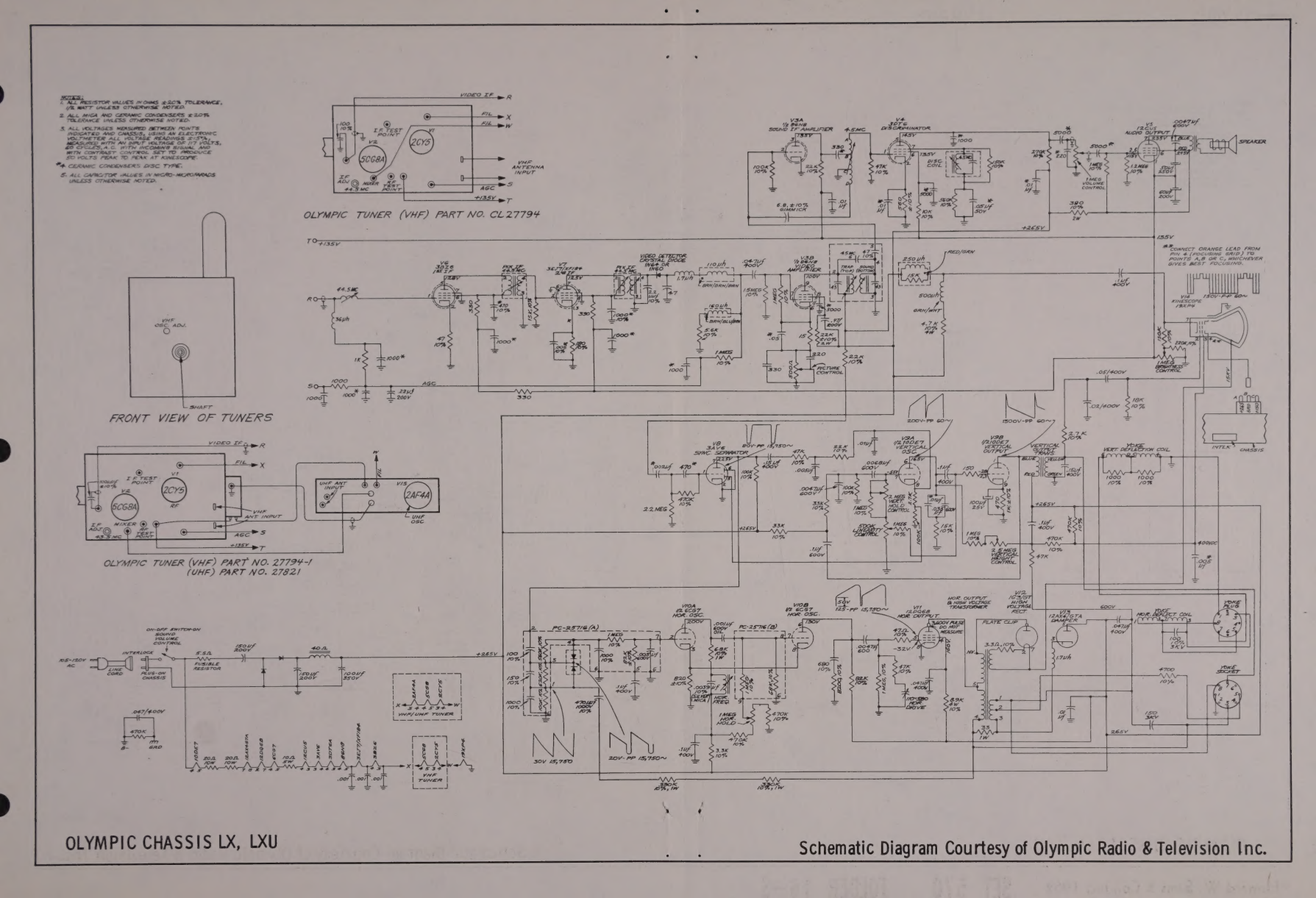
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

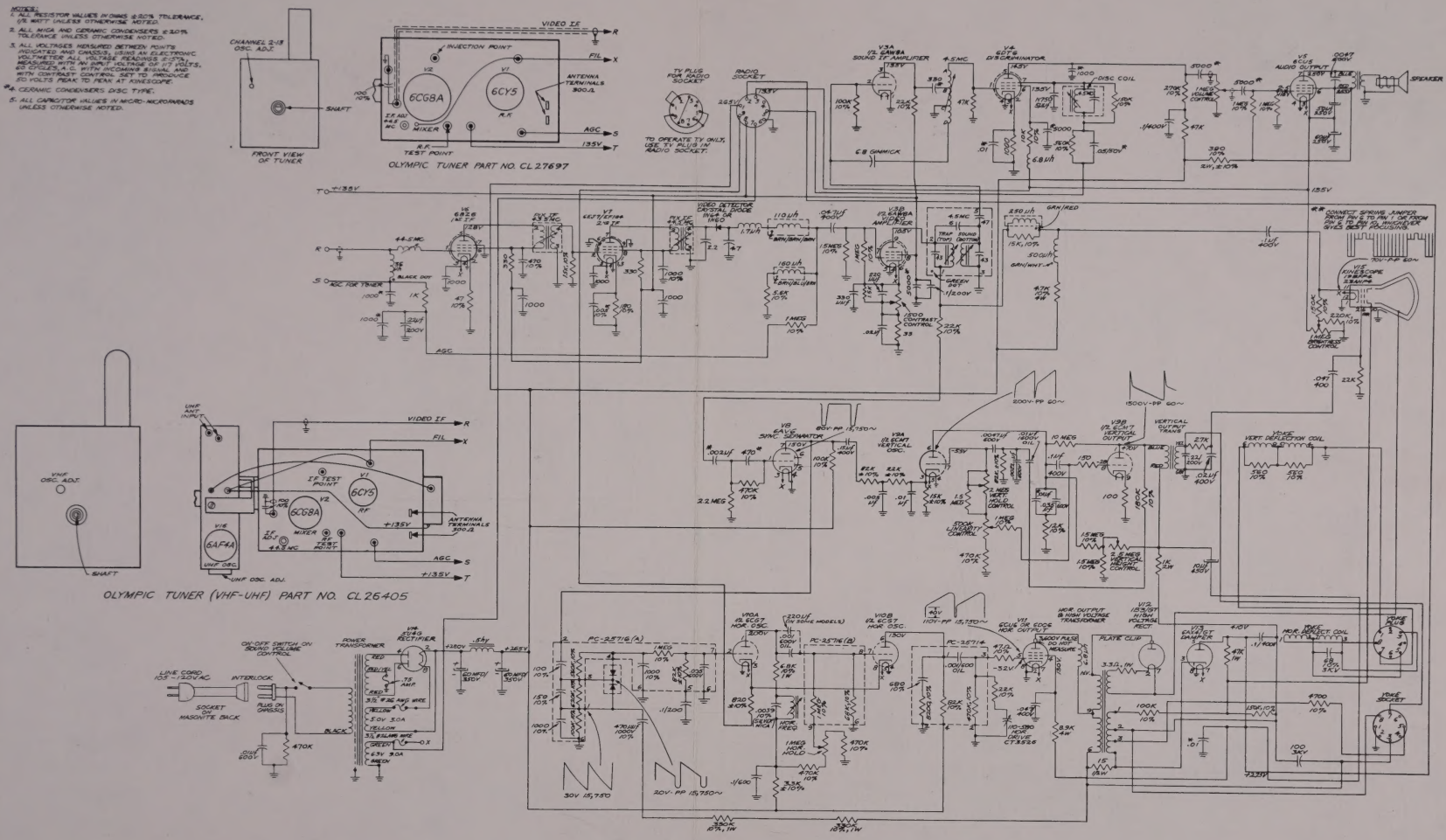
NAME	PART NO.	DESCRIPTION
Knob	480008-26	Speed
Knob	TK-279	Volume
Knob	TK-278-1	Function
Button	480009-2	Part of Function Knob
Handle	TH-644	Leather
Cabinet	1220010	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)


NOTES:
1. ALL RESISTOR VALUES IN OHMS ±20% TOLERANCE, 1/2 WATT UNLESS OTHERWISE NOTED.
2. ALL MICA AND CERAMIC CONDENSERS ±10% TOLERANCE UNLESS OTHERWISE NOTED.
3. ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND CHASSIS, USING AN ELECTRONIC VOLTMETER ALL VOLTAGE READINGS ±15% MEASURED WITH AN INPUT VOLTAGE OF 117 VOLTS, 60 CYCLES, A.C. WITH INCOMING SIGNAL AND WITH CONTRAST CONTROL SET TO PRODUCE 50 VOLTS PEAK TO PEAK AT KINESCOPE.
*CERAMIC CONDENSERS DISC TYPE.
5. ALL CAPACITOR VALUES IN MICRO-MICROFARADS UNLESS OTHERWISE NOTED.
OLYMPIC TUNER (VHF) PART NO. CL27794
FRONT VIEW OF TUNERS
OLYMPIC TUNER (VHF) PART NO. 27794-1
(UHF) PART NO. 27821
OLYMPIC CHASSIS LX, LXU
Schematic Diagram Courtesy of Olympic Radio & Television Inc.

OLYMPIC



OLYMPIC CHASSIS LA, LAU

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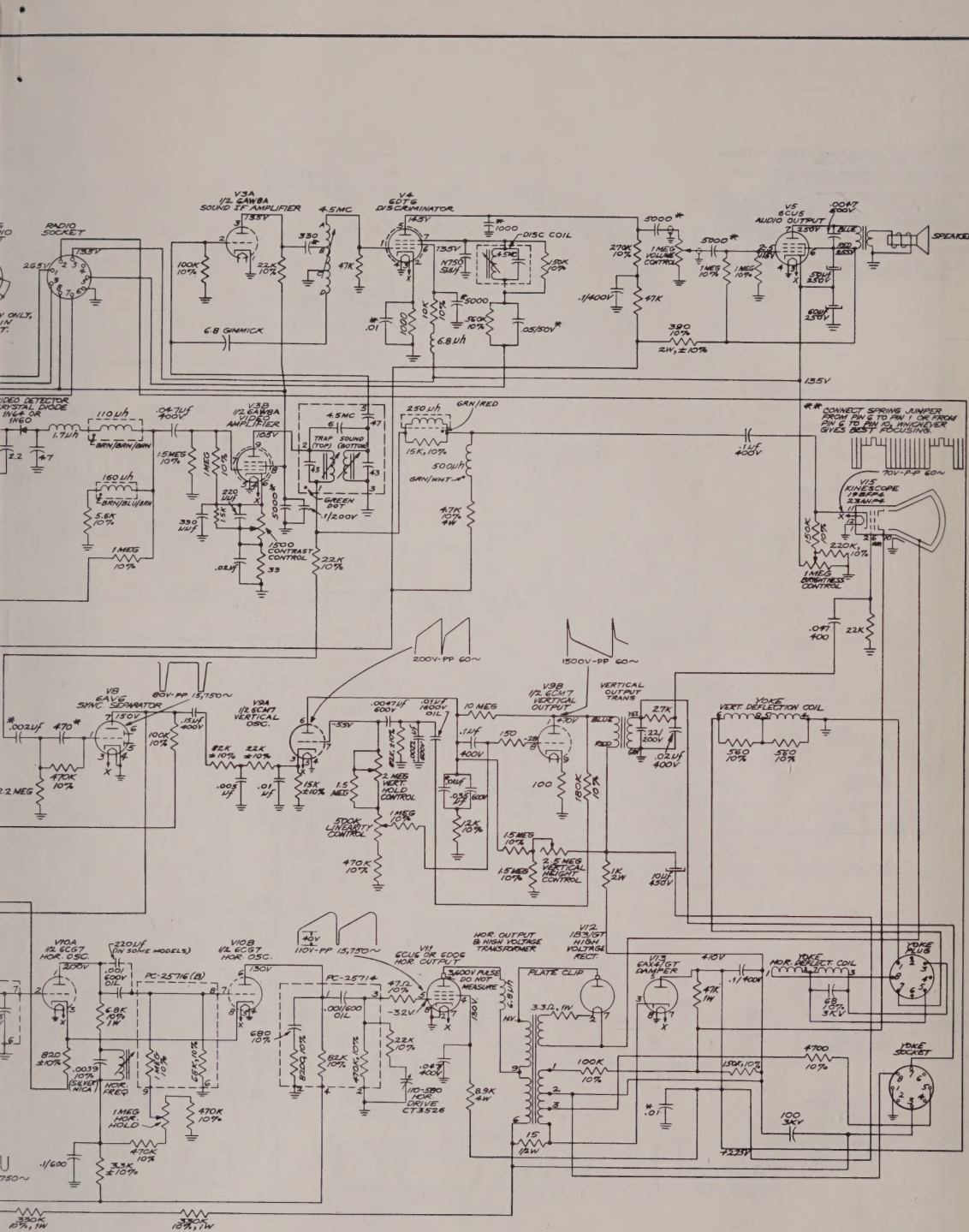

Schematic Diagram Courtesy of Olympic Radio & Television Inc.